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Research on Seismic Calibration of the International Monitoring System in Northern Eurasia

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November 2004

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Dr. Gerald I. Kent, et al.

Prepared by:
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The main goals of the "Russian Seismoacoustic Research for CTBT Monitoring" project were:

- Calibration of seismic stations of the Russian Academy of Sciences (RAS) included in the International Monitoring System (IMS).
- Development of travel time data for calibration studies in northern Eurasia.
- Collection data on peaceful nuclear explosions (PNEs) in the former Soviet Union

The Geophysical Survey (GS) of RAS and the Complex Seismological Expedition (CSE) of the Joint Institute of Physics of the Earth of the RAS, collected Northern Eurasian data on time arrivals for regional seismic phases.

Tables for Pn, Pg, Sn and Lg waves have been updated. From travel-time residual analysis, we conclude that the IASPEI-91 predicted travel times are substantially biased in comparison with those predicted by Source Specific Station Corrections developed in this report.

We review recently published and historical data on the parameters of PNEs' in the former Soviet Union. The seismic locations of the International Seismological Center (ISC) for some PNEs' show large misallocations (greater than 10km) according to newly found information on these PNEs' actual locations. For ISC estimates of origin times for some PNEs' in the paper of Sultanov et. al., 1999, we provide adjusted data.

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CONVERSION TABLE

Conversion Factors for U.S. Customary to metric (SI) units of measurement.

MULTIPLY →	BY →	TO GET
TO GET ←	BY ←	DIVIDE

angstrom	1.000 000 x E -10	meters (m)
atmosphere (normal)	1.013 25 x E +2	kilo pascal (kPa)
bar	1.000 000 x E +2	kilo pascal (kPa)
barn	1.000 000 x E -28	meter^2 (m^2)
British thermal unit (thermochemical)	1.054 350 x E +3	joule (J)
calorie (thermochemical)	4.184 000	joule (J)
cal (thermochemical/cm^2)	4.184 000 x E -2	mega joule/m^2 (MJ/m^2)
curie	3.700 000 x E +1	*giga bacquerel (GBq)
degree (angle)	1.745 329 x E -2	radian (rad)
degree Fahrenheit	$t_k = (t°f + 459.67)/1.8$	degree kelvin (K)
electron volt	1.602 19 x E -19	joule (J)
erg	1.000 000 x E -7	joule (J)
erg/second	1.000 000 x E -7	watt (W)
foot	3.048 000 x E -1	meter (m)
foot-pound-force	1.355 818	joule (J)
gallon (U.S. liquid)	3.785 412 x E -3	meter^3 (m^3)
inch	2.540 000 x E -2	meter (m)
jerk	1.000 000 x E +9	joule (J)
joule/kilogram (J/kg) radiation dose absorbed	1.000 000	Gray (Gy)
kilotons	4.183	terajoules
kip (1000 lbf)	4.448 222 x E +3	newton (N)
kip/inch^2 (ksi)	6.894 757 x E +3	kilo pascal (kPa)
ktap	1.000 000 x E +2	newton-second/m^2 ($N-s/m^2$)
micron	1.000 000 x E -6	meter (m)
mil	2.540 000 x E -5	meter (m)
mile (international)	1.609 344 x E +3	meter (m)
ounce	2.834 952 x E -2	kilogram (kg)
pound-force (lbs avoirdupois)	4.448 222	newton (N)
pound-force inch	1.129 848 x E -1	newton-meter (N-m)
pound-force/inch	1.751 268 x E +2	newton/meter (N/m)
pound-force/foot^2	4.788 026 x E -2	kilo pascal (kPa)
pound-force/inch^2 (psi)	6.894 757	kilo pascal (kPa)
pound-mass (lbm avoirdupois)	4.535 924 x E -1	kilogram (kg)
pound-mass-foot^2 (moment of inertia)	4.214 011 x E -2	kilogram-meter^2 ($kg-m^2$)
pound-mass/foot^3	1.601 846 x E +1	kilogram-meter^3 (kg/m^3)
rad (radiation dose absorbed)	1.000 000 x E -2	**Gray (Gy)
roentgen	2.579 760 x E -4	coulomb/kilogram (C/kg)
shake	1.000 000 x E -8	second (s)
slug	1.459 390 x E +1	kilogram (kg)
torr (mm Hg, 0^0 C)	1.333 22 x E -1	kilo pascal (kPa)

*The bacquerel (Bq) is the SI unit of radioactivity; 1 Bq = 1 event/s.
**The Gray (GY) is the SI unit of absorbed radiation.

TABLE OF CONTENTS

Section		Page
1	INTRODUCTION	1
2	DEVELOPMENT OF TRAVEL-TIME TABLES FOR DIFFERENT GEOTECTONIC PROVINCES OF NORTHERN EURASIA	3
2.1	UPDATED REGIONALIZATION FOR NORTHERN EURASIA.	3
2.2	CENTRAL-EAST-EUROPEAN TERRITORY.	7
2.3	TIMAN-PECHORA, SCYTHIAN AND TURANIAN PLATES.	11
2.4	URAL FOLDED REGION.	14
2.5	CENOZOIC FOLDED REGIONS.	17
2.6	KAZAKH MASSIF.	21
2.7	WEST-SIBERIAN PLATFORM.	25
2.8	ALTAI AND SAYAN REGION.	28
2.9	BAIKAL RIFT ZONE.	32
2.10	SIBERIAN PLATFORM.	34
2.11	NORTH EAST TERRITORY AND CHUKOT PENINSULA.	37
2.12	KAMCHATKA-KURIL-SAKHALIN REGIONS.	39
2.13	AMUR AND MARITIME TERRITORY.	41
3	ANALYSIS OF DEVELOPED 1-D TRAVEL-TIME TABLES FOR DIFFERENT GEOTECTONIC PROVINCES OF NORTHERN EURASIA	43
4	CALCULATIONS OF SSSCS FOR SEISMIC STATIONS OF THE RUSSIAN ACADEMY OF SCIENCES INCLUDED TO THE IMS	51
5	ANALYSIS OF TRAVEL-TIME RESIDUALS	84
6	TESTS ON RELOCATION	89
7	REVIEW OF HISTORICAL AND RECENTLY PUBLISHED DATA ON PARAMETERS OF PNES CARRIED OUT IN THE FORMER USSR	97
7.1	NEW DATA ON PNES LOCATIONS.	97
7.2	PNE TAWDA.	97
7.3	PNE TAIGA.	98
	7.3.1 PNE Crystal.	*99*
	7.3.2 PNEs Helium.	*100*
	7.3.3 PNE Magistral.	*101*
	7.3.4 PNE Fakel (10 July 1972, Kharkov region).	*102*
	7.3.5 PNE Rift-3.	*102*
7.4	DISCREPANCIES IN ORIGIN TIMES FOR SOME PNE.	114
8	REFERENCES	116
APPENDIX		
A	ABBREVIATED SEISMIC BULLETINS	A-1
B	ABBREVIATED SEISMIC BULLETINS	B-1
	DISTRIBUTION LIST	DL-1

FIGURES

Figures		Page
1	Regionalization of Northern Eurasia	4
2	Travel-Time Curves for Central-East-European Territory	10
3	Travel-Time Curves for Timan-Pechora, Scythian and Turanian Plates	13
4	Travel -Time Curves for Ural Folded Region	16
5	Travel-Time Curves for Cenozoic Folded Regions	20
6	Travel-Time Curves for Kazakh Massif	24
7	Travel-Time Curves for West-Siberian Platform	27
8	Travel-Time Curves for Altai and Sayan Region	31
9	Travel-Time Curves for Baikal Rift Zone	33
10	Travel-Time Curves for Siberian Platform	36
11	Travel-Time Curves for North-East Territory and Chukot Peninsula	38
12	Travel-Time Curves for Kamchatka-Kuril-Sakhalin Regions	40
13	Collected Data on Travel Times for Amur and Maritime Territory	42
14	Generalized Regionalization of Northern Eurasia	48
15	Pn Travel-Time Curves for Northern Eurasia	49
16	Sn Travel-Time Curves for Northern Eurasia	49
17	Pg Travel-Time Curves for Northern Eurasia	50
18	Lg Travel-Time Curves for Northern Eurasia	50
19	OBN SSSCs and Modeling Errors for Pn	52
20	OBN SSSCs and Modeling Errors for Sn	53
21	OBN SSSCs and Modeling Errors for Pg	54
22	OBN SSSCs and Modeling Errors for Lg	55
23	ARU SSSCs and Modeling Errors for Pn	56
24	ARU SSSCs and Modeling Errors for Sn	57
25	ARU SSSCs and Modeling Errors for Pg	58
26	ARU SSSCs and Modeling Errors for Lg	59
27	KIVO SSSCs and Modeling Errors for Pn	60
28	KIVO SSSCs and Modeling Errors for Sn	61
29	KIVO SSSCs and Modeling Errors for Pg	62
30	KIVO SSSCs and Modeling Errors for Lg	63
31	TIXI SSSCs and Modeling Errors for Pn	64
32	TIXI SSSCs and Modeling Errors for Sn	65
33	TIXI SSSCs and Modeling Errors for Pg	66
34	TIXI SSSCs and Modeling Errors for Lg	67
35	MA2 SSSCs and Modeling Errors for Pn	68
36	MA2 SSSCs and Modeling Errors for Sn	69
37	MA2 SSSCs and Modeling Errors for Pg	70
38	MA2 SSSCs and Modeling Errors for Lg	71
39	SEY SSSCs and Modeling Errors for Pn	72
40	SEY SSSCs and Modeling Errors for Sn	73
41	SEY SSSCs and Modeling Errors for Pg	74
42	SEY SSSCs and Modeling Errors for Lg	75
43	YAK SSSCs and Modeling Errors for Pn	76
44	YAK SSSCs and Modeling Errors for Sn	77
45	YAK SSSCs and Modeling Errors for Pg	78
46	YAK SSSCs and Modeling Errors for Lg	79
47	TLY SSSCs and Modeling Errors for Pn	80
48	TLY SSSCs and Modeling Errors for Sn	81
49	TLY SSSCs and Modeling Errors for Pg	82
50	TLY SSSCs and Modeling Errors for Lg	83

Figures **Page**

51 TRAVEL-TIME RESIDUALS FOR ARU 86
52 TRAVEL-TIME RESIDUALS FOR OBN 87
53 TRAVEL-TIME RESIDUALS FOR PYA 88
54 LOCATIONS FOR PNE TAWDA 104
55 LOCATIONS IN THE VICINITY OF PNE TAIGA 105
56 LOCATIONS FOR PNE TAIGA 106
57 LOCATIONS IN THE VICINITY OF PNE CRYSTAL 107
58 LOCATIONS FOR PNE CRYSTAL 108
59 LOCATIONS FOR PNE HELIUM-1 109
60 LOCATIONS FOR PNES HELIUM-2-1 AND HELIUM-2-2 110
61 LOCATIONS FOR PNES HELIUM-3-1 AND HELIUM-3-2 111
62 LOCATIONS FOR PNE MAGISTRAL 112
63 LOCATIONS FOR PNE FAKEL 113
64 LOCATIONS FOR PNE RIFT-3 114

TABLES

Tables		Page
1	Regionalization of Northern Eurasia	5
2	Calibration Events for Central-East-European Territory.	7
3	Parameters of Travel-Time Curves Developed for Central-East-European Territory	9
4	Calibration Events for Timan-Pechora, Scythian and Turanian Plates.	11
5	Parameters of Travel-Time Curves Developed for Paleozoic Plates.	12
6	Calibration Events for Ural Folded Region.	14
7	Parameters of the Travel-Time Curves Developed for Ural Folded Region.	15
8	Calibration Events for Cenozoic Folded Regions.	17
9	Parameters of Travel-Time Curves Developed for Cenozoic Folded Regions.	19
10	Calibration Events for Kazakh Massif.	22
11	Parameters of the Travel-Time Curves Developed for Kazakh Massif.	23
12	Calibration Events for West-Siberian Platform.	25
13	Parameters of the Travel-Time Curves Developed for West-Siberian Platform.	26
14	Calibration Events for Altai and Sayan Region.	29
15	Parameters of Travel-Time Curves Developed for Altai and Sayan Region.	30
16	Calibration Events for Baikal Rift Zone.	32
17	Parameters of the Travel-Time Curves Developed for Baikal Rift Zone.	32
18	Calibration Events for Siberian Platform.	34
19	Parameters of the Travel-Time Curves Developed for Siberian Platform	35
20	Calibration Events for North-East Territory and Chukot Peninsula.	37
21	Parameters of the Travel-Time Curves Developed for North-East Territory and Chukot Peninsula	37
22	Calibration Events for Kamchatka-Kuril-Sakhalin Territory.	39
23	Parameters of the Travel-Time Curves Developed for Kamchatka-Kuril-Sakhalin Regions	39
24	Calibration Events for Amur and Maritime Territory.	41
25	Data on Comparison of Linear Regressions.	44
26	Generalized Regionalization of Northern Eurasia.	45
27	Parameters of the Generalized Travel-Time Curves (Depth = 0 km)	46
28	Modeling Errors for Generalized Geotectonic Provinces of Northern Eurasia.	47
29	Mean and Standard Deviation Values for Differences Between Predicted and Observed Travel Times.	85
30	Surrogate Stations for IMS Network Simulation	90
31	Nuclear Explosions (GT0) Relocation in Northern Eurasia	92
32	Seismic Locations for PNE Tawda (6 October 1967, Tyumen Region).	97
33	Seismic Locations for PNE Taiga (23 March 1971, Perm Region).	99
34	Seismic Locations for PNE Crystal (2 October 1974, Yakutiya).	100
35	Seismic locations for PNEs Helium (Perm Region)	100
36	Seismic Locations for PNE Magistral (25 June 1970, Orenburg region).	101
37	Seismic locations for PNE Fakel (9 July 1972, Kharkov region).	102
38	ISC Seismic Location for PNE Rift-3 (30 July 1982, Irkutsk region).	103
39.	Discrepancies of PNEs Origin Times Based on ISC Data.	115

SECTION 1
INTRODUCTION

This report presents the final results of three years of performance on the "Russian Seismoacoustic Research for CTBT Monitoring" project.

The main goals of the project were as follows:

- The calibration of seismic stations of the Russian Academy of Sciences (RAS) included in the International Monitoring System (IMS) being created to support CTBT monitoring.
- The development of data on travel times to be used for calibration studies in Northern Eurasia.
- The collection of recently published and historical data on peaceful nuclear explosions (PNEs) in the former Soviet Union.

To achieve these goals, the following was accomplished:

The updated regionalization of Northern Eurasia was carried out on the basis of recent neotectonics, geodynamics, and seismicity studies as well as the results of our analysis of Pn/Sn travel times. The territory of the Northern Eurasia was regionalized by subdividing it into 13 provinces: Central-East-European territory; Timan-Pechora Plate; Scythian and Turanian Plates; Cenozoic folded regions; Ural folded region; West-Siberian platform; Kazakh massif; Altai and Sayan region; Siberian platform; Baikal rift zone; Amur and Maritime territory; North East territory and Chukot Peninsula; and the Kamchatka-Kuril-Sakhalin region.

In collaboration with our subcontractors, the Geophysical Survey (GS) of RAS and the Complex Seismological Expedition (CSE) of the Joint Institute of Physics of the Earth of the RAS, data on time arrivals for regional seismic phases was collected for the aforementioned geotectonic provinces.

Based on full data sets for collected travel-times, travel-time tables for Pn, Pg, Sn, and Lg waves were updated. These travel-time tables have been updated from the preliminary ones developed during the first and second years of the project performance.

Upon completing construction and analysis of the newly developed travel-time tables for the 13 provinces studied, it was concluded (based on the geological and tectonic features of the studied provinces as well as statistical tests) that the territory of Northern Eurasia may be subdivided as follows: only three large geotectonic provinces for the Pn and Sn phases ((1) platform areas, (2) paleozoic massifs and young platforms (3) tectonically active regions); only two provinces for the Pg phase and only one province for the Lg phase. Travel-time tables for these generalized provinces of Northern Eurasia were developed and appropriate modeling errors were calculated.

Based on the generalized regionalization of Northern Eurasia, as well as newly developed 1-D travel-time tables and corresponding modeling errors, source specific station corrections (SSSCs) to the IASPEI-91 travel-time tables and corresponding modeling errors were calculated. The calculations were done for the RAS stations included in the IMS auxiliary network: OBN, ARU, KIVO, TLY, TIXI, YAK, MA2, and SEY. The software program for SSSCs and error calculations were developed by the Geophysical Survey of the RAS. This software program is based on an algorithm from the Technical Report CMR-98/46 (Yang *et. al.*, (1998)).

Completed analyses of travel-time residuals allowed us to conclude that the predicted travel times according to the IASPEI-91 tables are substantially biased in comparison with those predicted by our SSSCs. Mean residual deviation values for Pn waves for the SSSCs were 2.7 sec less than those predicted by the IASPEI-91 tables, for Sn waves 9.3 sec less and for Pg waves 2.1 sec less.

To test the effectiveness of the newly developed regional travel-time tables for location, we performed relocation tests with 44 PNEs in the former Soviet Union and 20 historical underground nuclear explosions at the Semipalatinsk Test Site (STS). To support our relocation tests SSSCs were calculated for 44 surrogate stations. Results of relocation tests allowed us to conclude that the newly developed 1-D regional travel-time tables are an effective tool for seismic source location in Northern Eurasia.

This annual report contains results of our review of recently published and historical data on the parameters of PNEs in the former Soviet Union. The emphasis was on PNEs for which only seismologically determined locations and origin times were available. It was shown that seismic locations of the International Seismological Center (ISC) for PNEs Tawda, Taiga, Crystal, the Helium tests, Magistral and Fakel are subject to large mislocations (greater than 10 km) according to newly found information on these PNEs' actual locations. Also, it was concluded that the ISC location for the PNE Rift-3 seems to be accurate to within 7 to 10 km. It was shown that based on data of the ISC estimates of origin times for some PNEs in the paper of Sultanov *et. al.*, 1999, should be adjusted (adjusted data is presented). The report contains only results for those PNEs for which we were able to come to definite and reliable conclusions. The total set of PNEs in the former USSR being reviewed includes all events for which only seismologically determined parameters are available and we expect to continue this effort.

Appendix I contains abbreviated (to be used mainly for regional location calibration studies) seismic bulletins for 77 PNEs conducted in the former USSR. These bulletins were compiled during the first and the second years of the project performance (1998-2000). Appendix II contains abbreviated seismic bulletins for 3 underground nuclear explosions on Amchitka Island, 23 PNEs conducted in the former USSR and 20 underground nuclear explosions at the STS. These bulletins were compiled during the third year of the project performance (2000-2001). Distances from stations to events in the aforementioned bulletins are limited to 3000 km. It is worth noting that the database developed by the Geophysical Survey of the RAS includes data on travel times for distances from stations to events up to 11000 km.

SECTION 2
DEVELOPMENT OF TRAVEL-TIME TABLES FOR DIFFERENT GEOTECTONIC PROVINCES OF NORTHERN EURASIA

In the third stage of project performance, the previous regionalization of Northern Eurasia (Kirichenko, Kraev, 2000) was updated for some provinces taking into account all collected data on travel times, velocity models for Earth's crust and upper mantle and the recently published map of Northern Eurasia's new tectonics (Grachev, 2000). For the updated regionalization of Northern Eurasia the travel-time tables were also updated and their modeling errors were estimated.

2.1 UPDATED REGIONALIZATION FOR NORTHERN EURASIA.

The Timan-Pechora plate was extracted from the Central-East-European territory due to lower values of Pn and Sn velocities for this plate.

The Scythian and Turanian plates were extracted from Cenozoic folded regions due to somewhat higher values of Pn and Sn velocities for these plates.

Polygon vertices for the Central-East-European territory, Cenozoic folded regions, Kazakh massif, Ural folded region, Altai and Sayan region, Baikal rift zone, Siberian platform, Amur and Maritime territory, North East territory, Chukot peninsula, and Kamchatka-Kuril-Sakhalin region were adjusted according to newly obtained information.

Figure 1 presents the updated map of Northern Eurasia regionalization (1° x 1° network). Polygon vertices for the specific provinces are presented in Table 1.

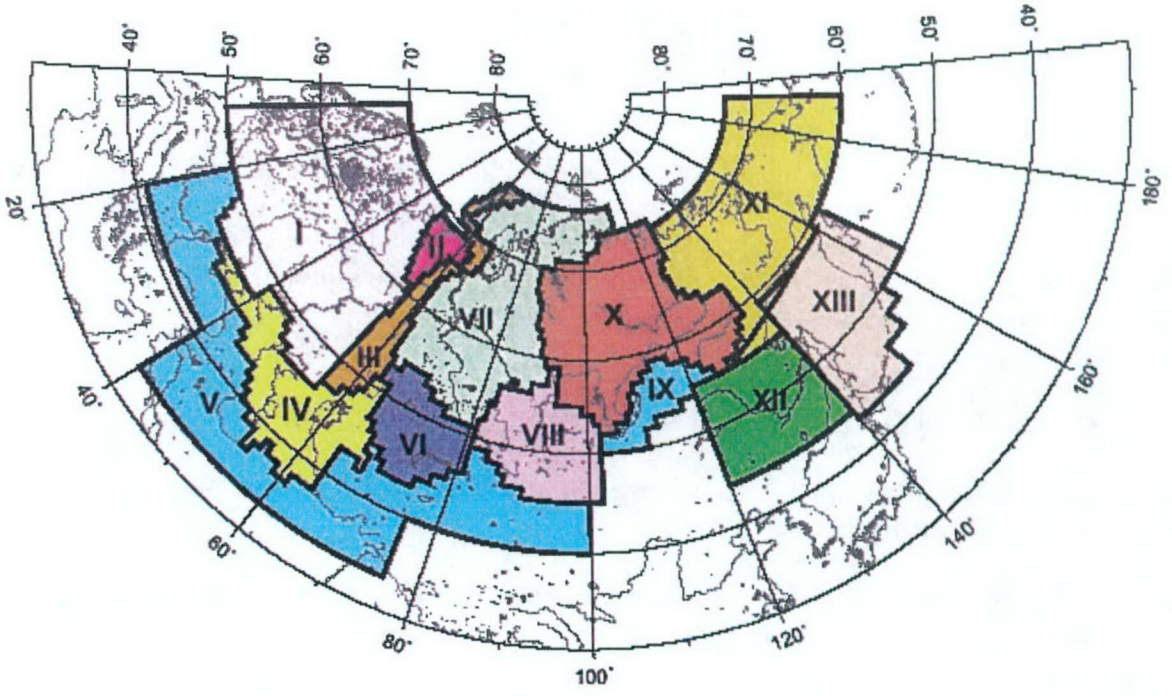


Figure 1. Regionalization of Northern Eurasia.

I. Central-East-European territory; II. Timan-Pechora plate; III. Ural folded region; IV. Scythian and Turanian plates; V. Cenozoic folded regions; VI. Kazakh massif; VII. West-Siberian platform; VIII. Altai and Sayan region; IX. Baikal rift zone; X. Siberian platform; XI. North East territory and Chukot Peninsula; XII. Amur and Maritime territory; XIII. Kamchatka-Kuril-Sakhalin region.

Table 1. Regionalization of Northern Eurasia.

No.	Region	Polygon Vertices, Lat. (deg. N)-Long. (deg. E)
I	Central-East-European territory	70-48 67-48 67-49 66-49 66-50 65-50 65-51 64-52 63-52 63-53 62-53 62-54 61-54 61-56 60-57 57-57 57-56 46-56 46-49 47-49 47-47 48-46 49-46 49-40 47-40 47-27 48-27 48-26 49-26 49-25 50-25 50-10
II	Timan-Pechora Plate	69-62 68-62 68-64 67-64 67-63 66-63 66-59 65-59 63-58 63-57 60-57 60-56 61-56 61-54 62-54 62-53 63-53 63-52 64-52 64-51 65-51 65-50 66-50 66-49 67-49 67-48
III	Ural folded region	76-69 76-66 75-66 75-61 74-61 74-58 73-58 72-57 71-56 71-61 70-61 70-68 67-68 67-67 66-67 66-64 64-61 58-61 58-62 54-62 54-63 51-63 51-62 49-62 49-61 48-61 48-59 47-59 47-56 57-56 57-57 63-57 63-58 65-58 65-59 66-59 66-63 67-63 67-64 68-64 68-62 69-62 69-58 70-58 70-54 71-54 71-52 73-52 73-54 74-54 74-55 75-55 75-56 76-56 76-58
IV	Scythian and Turanian Plates	51-62 51-65 47-65 47-66 46-66 46-67 44-67 44-68 43-67 43-64 38-64 38-61 37-61 37-59 38-59 39-57 39-56 38-56 38-55 37-55 37-54 39-54 40-52 40-50 41-50 41-49 42-49 42-48 43-48 44-44 44-43 45-43 45-33 46-33 46-30 47-30 49-46 48-46 48-47 47-47 47-49 46-49 46-56 47-56 47-59 48-59 48-61 49-61 49-62
V	Cenozoic folded regions (Carpathian, Crimea, Caucasus, Kopet-Dagh, Tien-Shan)	50-20 50-25 49-25 49-26 48-26 48-27 47-27 47-30 46-30 46-33 45-33 45-43 44-43 44-44 43-44 43-48 42-48 42-49 41-49 41-50 40-50 40-52 39-52 39-54 37-54 37-55 38-55 38-56 39-56 39-57 38-57 38-59 37-59 37-61 38-61 38-64 43-64 43-67 42-67 42-68 44-68 44-67 45-67 45-69 44-69 44-70 43-70 43-75 44-75 44-77 45-77 45-79 46-79 46-81 49-81 49-84 48-84 48-86 47-86 47-87 46-87 46-90 45-90 45-100 40-100 40-76 34-76 34-40 41-40 41-20
VI	Kazakh massif	53-63 53-65 54-65 54-70 53-70 53-72 52-72 52-75 51-75 51-81 46-81 46-79 45-79 45-77 44-77 44-75 43-75 43-70 44-70 44-69 45-69 45-67 46-67 46-66 47-66 47-65 51-65 51-63

No.	Region	Polygon Vertices, Lat. (deg. N)-Long. (deg. E)
VII	West-Siberian platform	77-69 77-113 74-113 74-106 73-106 73-105 72-105 72-101 71-101 71-90 70-90 70-86 67-86 67-87 66-87 66-88 63-88 63-89 62-89 62-90 60-90 60-91 59-91 59-92 57-92 57-89 56-89 56-86 57-86 57-85 56-85 56-83 54-83 54-82 52-82 52-81 51-81 51-75 52-75 52-72 53-72 53-70 54-70 54-65 53-65 53-63 54-63 54-62 58-62 58-61 64-61 64-62 65-62 65-64 66-64 66-67 67-67 67-68 70-68 70-61 71-61 71-56 72-56 72-57 73-57 73-58 74-58 74-61 75-61 75-66 76-66 76-69
VIII	Altai and Sayan region	59-92 59-94 55-94 55-99 54-99 54-101 53-101 53-102 43-102 45-90 46-90 46-87 47-87 47-86 48-86 48-84 49-84 49-81 52-81 52-82 54-82 54-83 56-83 56-85 57-85 57-86 56-86 56-89 57-89 57-92
IX	Baikal rift zone	52-102 52-105 53-105 53-107 54-107 54-108 56-108 56-109 57-109 57-111 58-111 58-113 59-113 59-117 58-117 58-121 57-121 57-123 56-123 56-125 55-125 55-120 54-120 54-117 53-117 53-112 52-112 52-110 50-110 50-102
X	Siberian platform	74-106 74-127 69-127 69-125 68-125 68-124 67-124 67-125 65-125 65-127 64-127 64-130 63-130 63-136 59-136 59-134 58-134 58-133 57-133 57-131 56-131 56-128 55-128 55-125 56-123 57-123 57-121 58-121 58-117 59-117 59-113 58-111 57-111 57-109 56-109 56-108 54-108 54-107 53-105 52-105 52-102 53-102 53-101 54-101 54-99 55-99 55-94 59-94 59-91 60-91 60-90 62-90 62-89 63-89 63-88 66-88 66-87 67-87 67-86 70-86 70-90 71-90 71-101 72-101 72-105 73-105 73-106
XI	North East territory and Chukot Peninsula	73-127 73-170W 60-170W 60-160 59-160 59-140 55-140 55-128 59-160 59-140 55-140 55-128 56-128 56-131 57-131 57-133 58-133 58-134 59-134 59-136 63-136 63-130 64-130 64-127 65-127 65-125 67-125 67-124 68-124 68-125 69-125 69-127
XII	Amur and Maritime territory	55-120 55-140 44-140 44-120
XIII	Kamchatka-Kuril-Sakhalin region	59-160 60-160 60-164 50-164 50-157 48-157 48-154 46-154 46-150 43-150 43-140

For the regions in Table 1, travel-time tables for Pn, Pg, Sn and Lg waves were updated. These updated travel-time tables substitute those that were developed during the first and second stages of the project performance.

The general approach for travel-time table development was the same as previously but the amount of collected data on travel times allowed using mainly data from GT0 calibration events.

Regional travel-time tables were developed for the distance range from 2 to 20 degrees for Pn, Sn and Lg waves, and for the distance range from 2 to 10 degrees for Pg waves.

2.2 CENTRAL-EAST-EUROPEAN TERRITORY.

To develop travel-time tables for this territory, we used data on arrival times imediately measured using seismic records of the following stations of the Geophysical Survey: OBN (station of the IMS auxiliary network), PUL, SVE and ARU (station of the IMS auxiliary network), stations of the Dagestan network (BUY, AKT, DRN, DBC, DLM). Also, data from the following groups of temporary stations of the Complex Seismological Expedition at the territory of East-European Platform: Ukrainian (including stations LITI& and BOGY& – surrogates of the IMS primary station AKASG); European (including stations YUR& _ VISK& - surrogates of the IMS auxiliary station KIRV), as well as Caucasus, Ural and Karelia. Finally, arrival times from ISC bulletins (mainly Pn and Sn arrivals) for the stations in Western and Eastern Europe as well as Scandinavian stations and data from station bulletins of the basic teleseismic network of the GS RAS were added to the newly measured and collected arrival times.

Data on calibration events for Central-East-European territory used for travel-time table development is presented in Table 2.

Table 2. Calibration Events for Central-East-European Territory.

No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Galite, capacity A-1	66/04/22	Guriev	2	58	0.26	47.829	47.935
2.	Grifon, hole 1001	69/09/02	Perm	4	59	58.61	57.220	55.393
3.	Grifon, hole 1002	69/09/08	Perm	4	59	58.70	57.220	55.417
4.	Takhta-Kugultinskoye	69/09/26	Stavropol	6	59	58.14	45.848	42.600
5.	Mangyshlak, hole 2-T	69/12/06	Mangyshlak	7	2	59.85	43.867	54.800
6.	Mangyshlak, hole 6-T	70/12/23	Mangyshlak	7	0	59.76	44.025	54.933
7.	Globe-4	71/07/02	Komi	17	0	1.13	67.283	63.467
8.	Globe-3	71/07/10	Komi	17	0	1.38	64.167	55.267
9.	Globe-1	71/09/19	Ivanovo	11	0	1.08	57.508	42.643
10.	Globe-2	71/10/04	Arkhangelsk	10	0	0.14	61.358	48.092

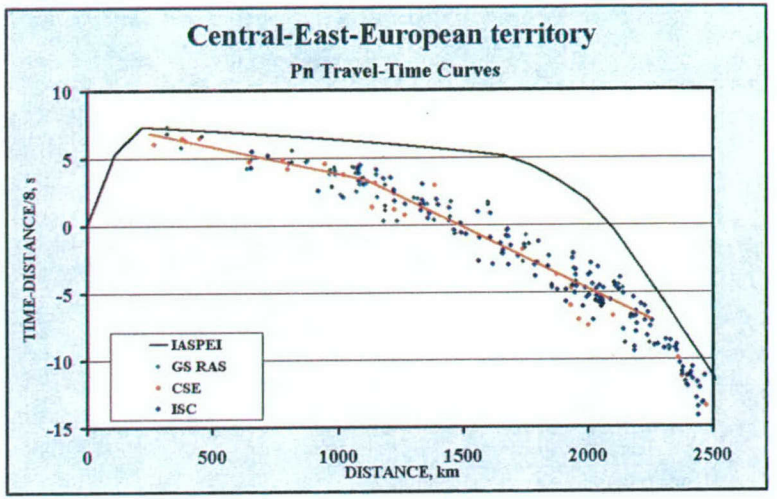
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
11.	Region-3	72/08/20	Uralsk	3	0	0.01	49.400	48.142
12.	Region-1	72/09/21	Orenburg	9	0	0.31	52.118	52.068
13.	Region-4	72/10/03	Kalmykiya	9	0	0.18	46.853	44.938
14.	Region-2	72/11/24	Orenburg	9	0	0.04	51.990	51.867
15.	Galite, capacity A-3-2	76/03/29	Guriev	7	0	0.23	47.897	48.133
16.	Galite, capacity A-5	77/09/30	Guriev	6	59	58.43	47.897	48.161
17.	Vega, capacity 1T	80/10/08	Astrakhan	6	0	0.29	46.757	48.275
18.	Vega, capacity 2T	81/09/26	Astrakhan	5	0	0.28	46.790	48.313
19.	Vega, capacity 4T	81/09/26	Astrakhan	5	3	59.94	46.771	48.304
20.	Vega, capacity 3T	82/10/16	Astrakhan	6	0	0.15	46.759	48.247
21.	Vega, capacity 5T	82/10/16	Astrakhan	6	5	0.08	46.752	48.258
22.	Vega, capacity 6T	82/10/16	Astrakhan	6	10	0.10	46.766	48.288
23.	Vega, capacity 7T	82/10/16	Astrakhan	6	15	0.17	46.760	48.300
24.	Lira, hole 1	83/07/10	Uralsk	3	59	59.99	51.363	53.306
25.	Lira, hole 2	83/07/10	Uralsk	4	4	59.94	51.367	53.327
26.	Lira, hole 3	83/07/10	Uralsk	4	9	59.85	51.380	53.340
27.	Vega, capacity 8T	83/09/24	Astrakhan	5	0	0.03	46.783	48.315
28.	Vega, capacity 9T	83/09/24	Astrakhan	5	5	0.03	46.788	48.297
29.	Vega, capacity 10T	83/09/24	Astrakhan	5	10	0.08	46.767	48.310
30.	Vega, capacity 11T	83/09/24	Astrakhan	5	15	0.14	46.749	48.303
31.	Vega, capacity 12T	83/09/24	Astrakhan	5	19	59.93	46.754	48.289
32.	Vega, capacity 13T	83/09/24	Astrakhan	5	25	0.00	46.766	48.274
33.	Lira, hole 4	84/07/21	Uralsk	2	59	59.81	51.358	53.319
34.	Lira, hole 5	84/07/21	Uralsk	3	4	59.71	51.371	53.337
35.	Lira, hole 6	84/07/21	Uralsk	3	9	59.85	51.391	53.351
36.	Agate	85/07/18	Arkhangelsk	21	15	0.29	65.994	41.038
37.	Rubin-1	88/09/06	Arkhangelsk	16	19	59.94	61.361	48.092

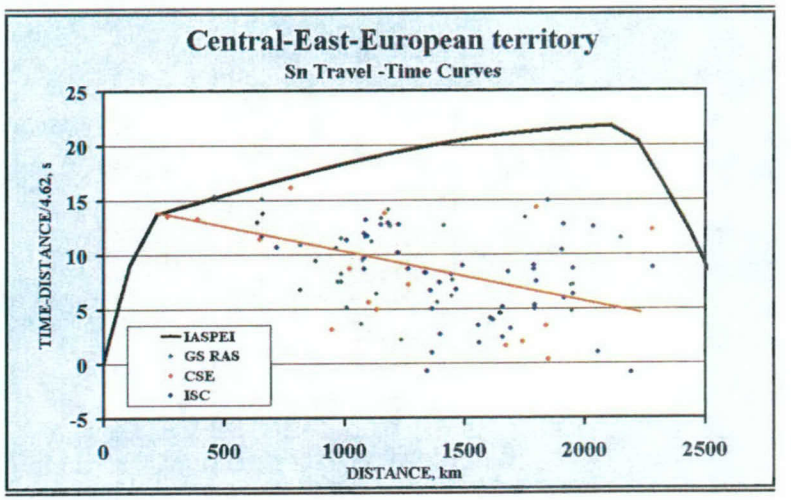
Parameters of linear regression equations for the travel-time tables developed are collected in Table 3. Figure 2 presents regional travel-time curves in the reduced scale.

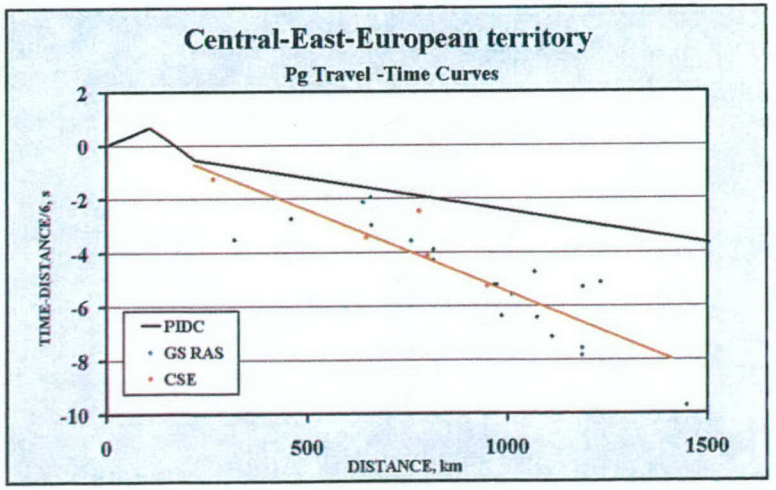
Table 3. Parameters of Travel-Time Curves Developed for Central-East-European Territory.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	220-1100	8.0	7.78	0.36	0.0040	0.0004	43	0.83	0.7
	1101-2200	8.0	13.24	0.60	0.0089	0.0004	108	0.92	1.1
Sn	220-2200	4.62	14.86	1.88	0.0046	0.0018	50	0.34	3.1
Pg	220-1400	6.0	0.88	0.87	0.0066	0.0010	29	0.80	1.5
Lg	220-2200	3.5	2.86	2.42	0.0077	0.0021	167	0.13	5.0







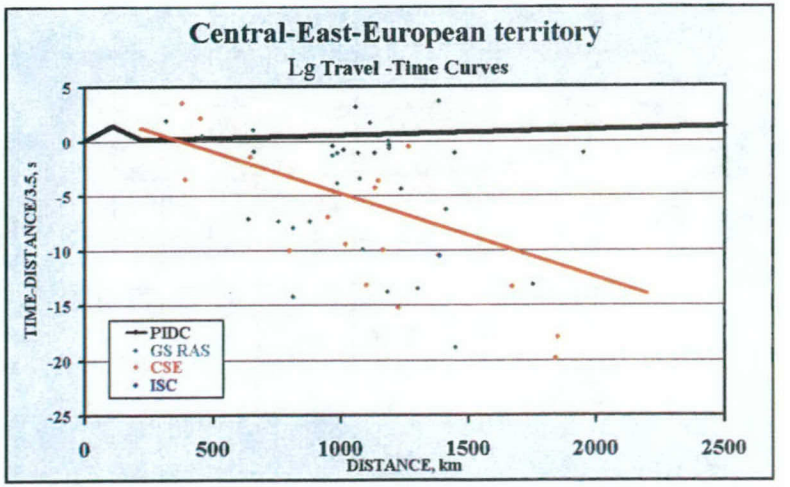


Figure 2. Travel-Time Curves for Central-East-European Territory.

2.3 TIMAN-PECHORA, SCYTHIAN AND TURANIAN PLATES.

Despite the relatively small dimensions of these plates and small amount of data on arrival times it was possible to develop generalized travel-time tables for these similar (from a tectonic point of view) young paleozoic plates.

To develop travel-time tables for these plates we used data on arrival times measured using seismic records of the following stations of the Geophysical Survey: ARU (station of the IMS auxiliary network), stations of the Dagestan network (BUY, AKT, DRN, DBC, DLM). Also, data from Caucasus and Ural groups of temporary stations of the Complex Seismological Expedition was used. Finally, arrival times from ISC bulletins (mainly Pn and Sn arrivals) for the stations in Asia Minor and Central Asia and data from the station bulletins of the basic teleseismic network of the GS RAS (including station PYA – surrogate of KBZ (station of the IMS primary network) and KIVO – station of the IMS primary network, VAN – surrogate of GEYT (station of the IMS primary network), THE – surrogate of THR (station of the IMS primary network) were added to the newly measured and collected arrival times.

Data on calibration events for Timan-Pechora, Scythian and Turanian Plates used for travel-time table development is presented in Table 4.

Table 4. Calibration Events for Timan-Pechora, Scythian and Turanian Plates.

No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Pamuk	68/05/21	Kashkardarya	3	59	11.98	38.918	65.032
2.	Takhta-Kugultinskoe	69/09/26	Stavropol	6	59	58.14	45.848	42.600
3.	Mangyshlak, hole 2-T	69/12/06	Mangyshlak	7	2	59.85	43.867	54.800
4.	Mangyshlak, hole 1-T	70/12/12	Mangyshlak	7	0	59.83	43.85	54.80
5.	Mangyshlak, hole 6-T	70/12/23	Mangyshlak	7	0	59.76	44.025	54.933
6.	Globe-3	71/07/10	Komi	17	0	1.38	64.167	55.267
7.	Region-4	72/10/03	Kalmykiya	9	0	0.18	46.853	44.938
8.	Meridian-3	73/08/15	Chimkent	2	0	0.02	42.775	67.408
9.	Meridian-2	73/09/19	Chimkent	3	0	0.18	45.758	67.825
10.	Vega, capacity 1T	80/10/08	Astrakhan	6	0	0.29	46.757	48.275
11.	Pyrite	81/05/25	Nenetskiy	5	0	0.32	68.20	53.50
12.	Vega, capacity 2T	81/09/26	Astrakhan	5	0	0.28	46.790	48.313
13.	Vega, capacity 4T	81/09/26	Astrakhan	5	3	59.94	46.771	48.304
14.	Vega, capacity 3T	82/10/16	Astrakhan	6	0	0.15	46.759	48.247
15.	Vega, capacity 5T	82/10/16	Astrakhan	6	5	0.08	46.752	48.258

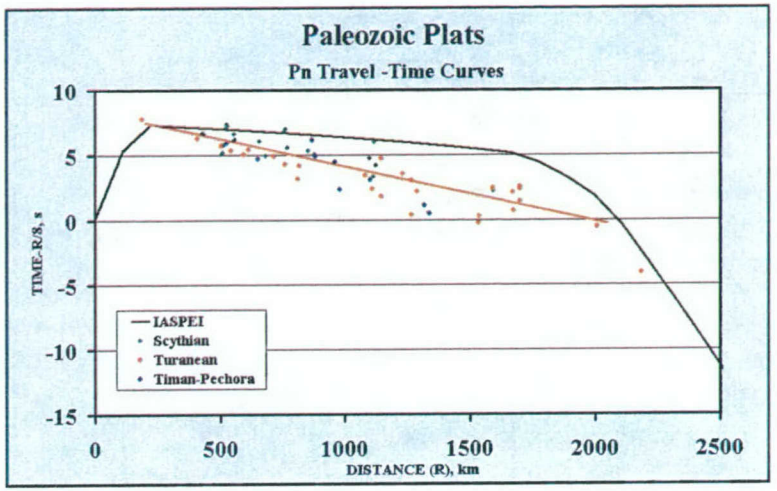
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
16.	Vega, capacity 6T	82/10/16	Astrakhan	6	10	0.10	46.766	48.288
17.	Vega, capacity 7T	82/10/16	Astrakhan	6	15	0.17	46.760	48.300
18.	Vega, capacity 8T	83/09/24	Astrakhan	5	0	0.03	46.783	48.315
19.	Vega, capacity 9T	83/09/24	Astrakhan	5	5	0.03	46.788	48.297
20.	Vega, capacity 10T	83/09/24	Astrakhan	5	10	0.08	46.767	48.310
21.	Vega, capacity 11T	83/09/24	Astrakhan	5	15	0.14	46.749	48.303
22.	Vega, capacity 12T	83/09/24	Astrakhan	5	19	59.93	46.754	48.289
23.	Vega, capacity 13T	83/09/24	Astrakhan	5	25	0.00	46.766	48.274
24.	Lira, hole 4	84/07/21	Uralsk	2	59	59.81	51.358	53.319
25.	Lira, hole 5	84/07/21	Uralsk	3	4	59.71	51.371	53.337
26.	Lira, hole 6	84/07/21	Uralsk	3	9	59.85	51.391	53.351
27.	Quartz-2	84/08/11	Komi	19	0	0.20	65.05	55.10
28.	Vega, capacity 14T	84/10/27	Astrakhan	6	0	0.10	46.90	48.15
29.	Vega, capacity 15T	84/10/27	Astrakhan	6	5	0.00	46.95	48.10
30.	Agate	85/07/18	Arkhangelsk	21	15	0.29	65.994	41.038
31.	Batholith-2	87/10/03	Aktyubinsk	15	15	0.03	47.60	56.20
32.	Rubin-1	88/09/06	Arkhangelsk	16	19	59.94	61.361	48.092

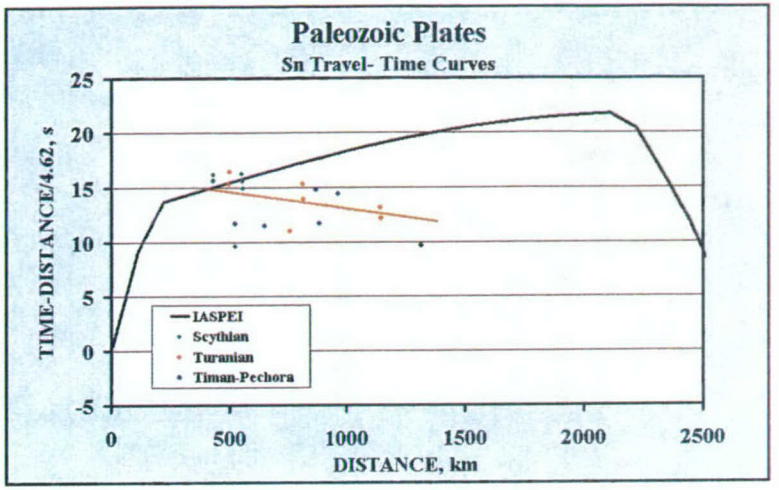
Parameters of linear regression equations for the travel-time tables developed are collected in Table 5. Figure 3 presents regional travel-time curves in the reduced scale.

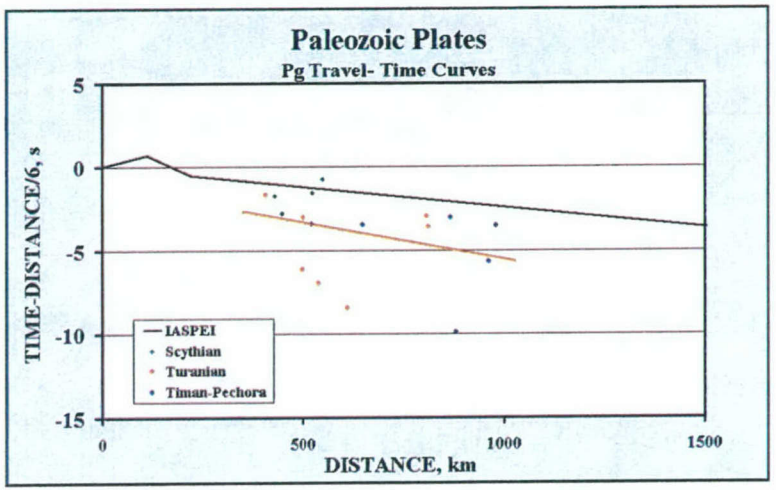
Table 5. Parameters of Travel-Time Curves Developed for Paleozoic Plates.

Basic Equation: $T-R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	200-2000	8.0	8.26	0.69	0.0042	0.0011	29	0.58	0.9
Sn	350-1400	4.62	16.08	1.47	0.0031	0.0020	20	0.35	2.0
Pg	350-1000	6.0	-1.16	2.31	0.0044	0.0034	17	0.31	2.6
Lg	350-1500	3.5	3.20	2.23	0.0085	0.0030	23	0.52	3.4







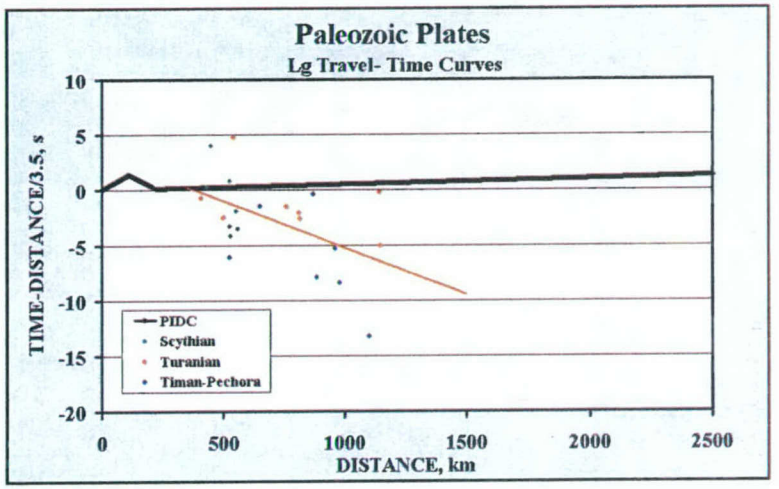


Figure 3. Travel-Time Curves for Timan-Pechora, Scythian and Turanian Plates.

2.4 URAL FOLDED REGION.

To develop travel-time tables for this region we used data on arrival times of the following stations of the Geophysical Survey: SVE and ARU (station of the IMS auxiliary network) as well as data from nine temporary stations of the Ural group and few temporary stations of Aktyubinsk group of the Complex Seismological Expedition. Almost all data on arrival times was measured using available seismic records.

Data on calibration events for the Ural folded region used for travel-time table development is presented in Table 6.

Table 6. Calibration Events for Ural Folded Region.

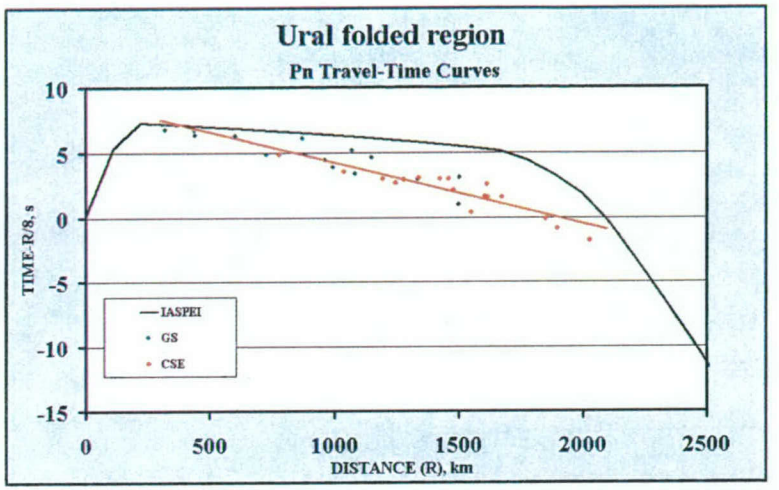
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Grifon, hole 1001	69/09/02	Perm	4	59	58.61	57.220	55.393
2.	Grifon, hole 1002	69/09/08	Perm	4	59	58.70	57.220	55.417
3.	Mangyshlak, hole 2-T	69/12/06	Mangyshlak	7	2	59.85	43.867	54.800
4.	Mangyshlak, hole 1-T	70/12/12	Mangyshlak	7	0	59.83	43.85	54.80
5.	Mangyshlak, hole 6-T	70/12/23	Mangyshlak	7	0	59.76	44.025	54.933
6.	Globe-4	71/07/02	Komi	17	0	1.13	67.283	63.467
7.	Globe-3	71/07/10	Komi	17	0	1.38	64.167	55.267
8.	Region-5	72/11/24	Kustanay	10	0	0.23	51.842	64.210
9.	Horizont-1	74/08/29	Komi	15	0	0.39	67.085	62.625
10.	Kraton-1	78/10/17	Khanty-Mansiysk	14	0	0.16	63.185	63.432
11.	Quartz-2	84/08/11	Komi	19	0	0.20	65.05	55.10
12.	Batholith-2	87/10/03	Aktyubinsk	15	15	0.03	47.60	56.20

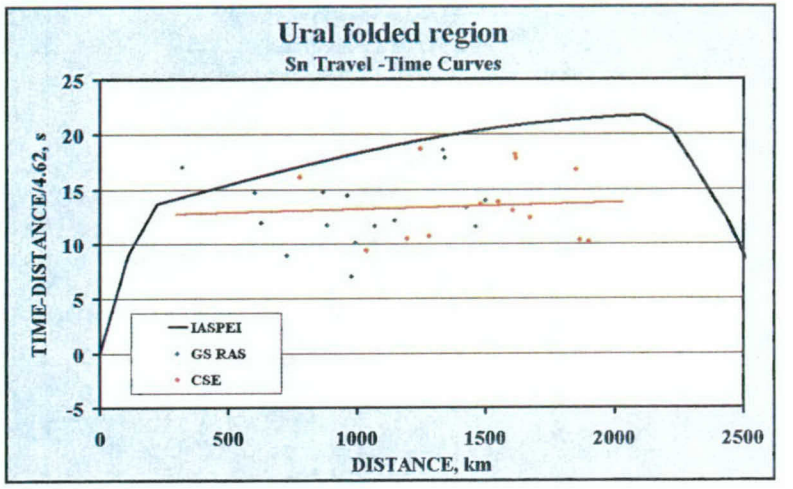
Parameters of linear regression equations for the travel-time tables developed are collected in Table 7. Figure 4 presents regional travel-time curves in the reduced scale.

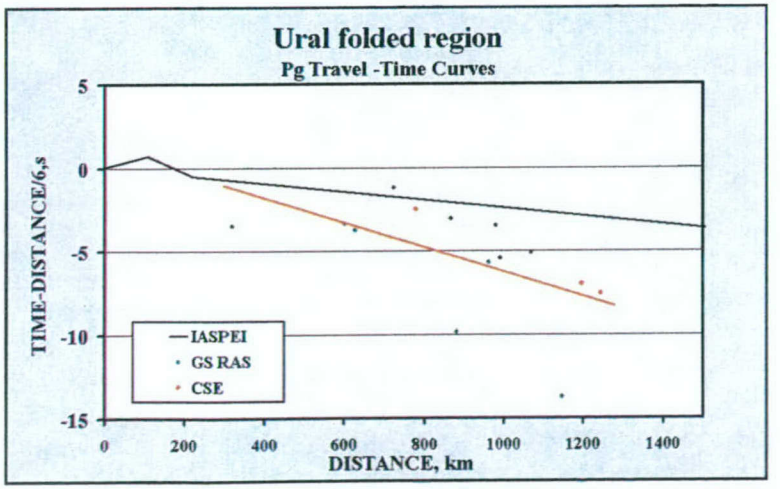
Table 7. Parameters of the Travel-Time Curves Developed for Ural Folded Region.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	300-2000	8.0	8.89	0.36	0.0047	0.0003	33	0.95	0.7
Sn	300-2000	4.62	12.54	1.90	-0.0006	0.0015	30	0.08	3.2
Pg	300-1200	6.0	1.13	2.80	0.0074	0.0030	14	0.57	2.8
Lg	300-2000	3.5	-2.80	3.16	0.0026	0.0025	20	0.24	4.8







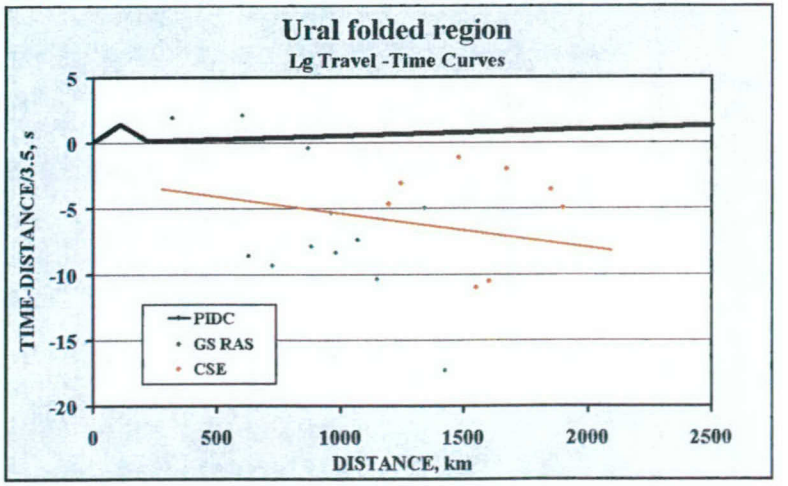


Figure 4. Travel -Time Curves for Ural Folded Region.

2.5 CENOZOIC FOLDED REGIONS.

The Cenozoic folded regions include Carpathian, Crimea, Caucasus, Kopet-Dagh and Tien-Shan mountain systems.

To develop travel-time tables for these regions we used data on arrival times from temporary stations of the Complex Seismological Expedition (located within southern parts of the former USSR), data from the station bulletins of the basic teleseismic network of the GS RAS, data from stations of the Dagestan regional network (requested by the GS RAS) as well as data on arrival times from ISC bulletins.

It was possible to measure arrival times for stations of the CSE located in Caucasus, Transcaucasia, Northern Tien-Shan and Central Asia regions (including station OS& - surrogate of AAK (station of the IMS auxiliary network) as well as for the stations of the Dagestan regional network (AKT, BUY, DRN, DBC and DLM, operated since beginning of 70s). These measurements were supplemented by data on P and S wave arrival times from station bulletins of the basic teleseismic network of the GS RAS and data from ISC bulletins (mainly, Pn and Sn arrivals) from stations in the south-eastern part of Eurasia (including station PYA – surrogate of KBZ (station of the IMS primary network) and KIVO – station of the IMS primary network, VAN – surrogate of GEYT (station of the IMS primary network), THE – surrogate of THR (station of the IMS primary network).

Data on calibration events for Cenozoic folded regions used for travel-time table development is presented in Table 8.

Table 8. Calibration Events for Cenozoic Folded Regions.

No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	Deg. N	deg. E
1.	Urta-Bulak	66/09/30	Bukhara	5	59	51.0	38.968	64.517
2.	Pamuk	68/05/21	Kashkardarya	3	59	11.98	38.918	65.032
3.	Takhta-Kugultinskoe	69/09/26	Stavropol	6	59	58.14	45.848	42.600
4.	Mangyshlak, hole 2-T	69/12/06	Mangyshlak	7	2	59.85	43.867	54.800
5.	Mangyshlak, hole 1-T	70/12/12	Mangyshlak	7	0	59.83	43.85	54.80
6.	Mangyshlak, hole 6-T	70/12/23	Mangyshlak	7	0	59.76	44.025	54.933
7.	Crater	72/04/11	Mary	6	0	1.92	37.35	62.05
8.	Region-4	72/10/03	Kalmykiya	9	0	0.18	46.853	44.938
9.	Meridian-3	73/08/15	Chimkent	2	0	0.02	42.775	67.408
10.	Meridian-2	73/09/19	Chimkent	3	0	0.18	45.758	67.825

No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	Deg. N	deg. E
11.	Galite, capacity A-5	77/09/30	Guriev	6	59	58.43	47.897	48.161
12.	Galite, capacity A-7	78/10/17	Guriev	4	59	59.06	47.850	48.120
13.	Vega, capacity 1T	80/10/08	Astrakhan	6	0	0.29	46.757	48.275
14.	Vega, capacity 2T	81/09/26	Astrakhan	5	0	0.28	46.790	48.313
15.	Vega, capacity 4T	81/09/26	Astrakhan	5	3	59.94	46.771	48.304
16.	Vega, capacity 3T	82/10/16	Astrakhan	6	0	0.15	46.759	48.247
17.	Vega, capacity 5T	82/10/16	Astrakhan	6	5	0.08	46.752	48.258
18.	Vega, capacity 6T	82/10/16	Astrakhan	6	10	0.10	46.766	48.288
19.	Vega, capacity 7T	82/10/16	Astrakhan	6	15	0.17	46.760	48.300
20.	Vega, capacity 8T	83/09/24	Astrakhan	5	0	0.03	46.783	48.315
21.	Vega, capacity 9T	83/09/24	Astrakhan	5	5	0.03	46.788	48.297
22.	Vega, capacity 10T	83/09/24	Astrakhan	5	10	0.08	46.767	48.310
23.	Vega, capacity 11T	83/09/24	Astrakhan	5	15	0.14	46.749	48.303
24.	Vega, capacity 12T	83/09/24	Astrakhan	5	19	59.93	46.754	48.289
25.	Vega, capacity 13T	83/09/24	Astrakhan	5	25	0.00	46.766	48.274
26.		64/11/16	STS, Degelen	6	0	0.2	49.8087	78.1334
27.		65/11/21	STS, Degelen	4	58	0.0	49.8192	78.0636
28.		66/03/20	STS, Degelen	5	50	0.3	49.7616	78.0636
29.		66/06/29	STS, Degelen	6	58	0.5	49.7616	78.0636
30.		66/10/19	STS, Degelen	3	57	59.9	49.7471	78.0205
31.		67/02/26	STS, Degelen	3	57	59.8	49.7457	78.0823
32.		67/10/17	STS, Degelen	5	4	0.2	49.7809	78.0038
33.		68/09/29	STS, Degelen	3	43	0.0	49.8120	78.1219
34.		69/03/07	STS, Degelen	8	26	59.8	49.8215	78.0627
35.		70/01/29	STS, Degelen	7	3	0.0	49.7956	78.1239
36.		70/06/28	STS, Degelen	1	58	0.0	49.8015	78.1068
37.		71/04/25	STS, Degelen	3	32	59.9	49.7685	78.0339
38.		71/12/30	STS, Degelen	6	21	0.2	49.7600	78.0371
39.		72/06/07	STS, Degelen	1	28	0.0	49.8268	78.1155

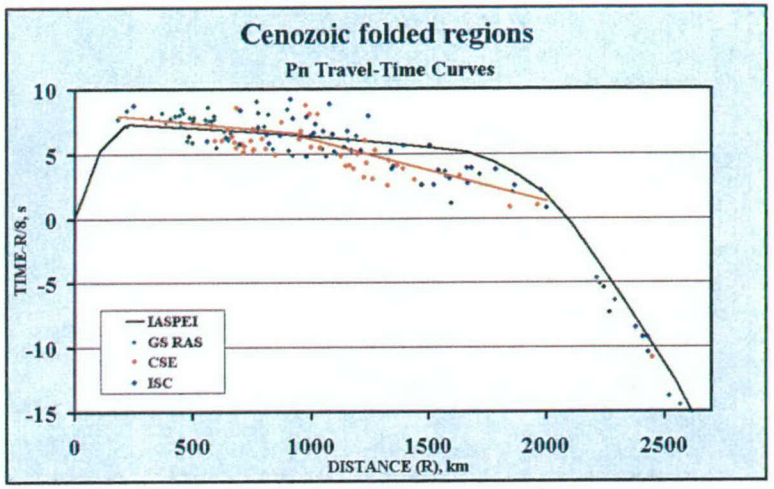
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	Deg. N	deg. E
40.		72/12/10	STS, Degelen	4	27	0.0	49.8194	78.0582
41.		68/06/19	STS, Balapan	5	5	59.8	49.9803	78.9855
42.		69/11/30	STS, Balapan	3	32	59.7	49.9243	78.9558
43.		71/06/30	STS, Balapan	3	56	59.8	49.9460	78.9805
44.		72/02/10	STS, Balapan	5	3	0.0	50.0243	78.8781
45.		72/11/02	STS, Balapan	1	27	0.2	49.9270	78.8173
46.		72/12/10	STS, Balapan	4	27	10.0	50.0270	78.9956

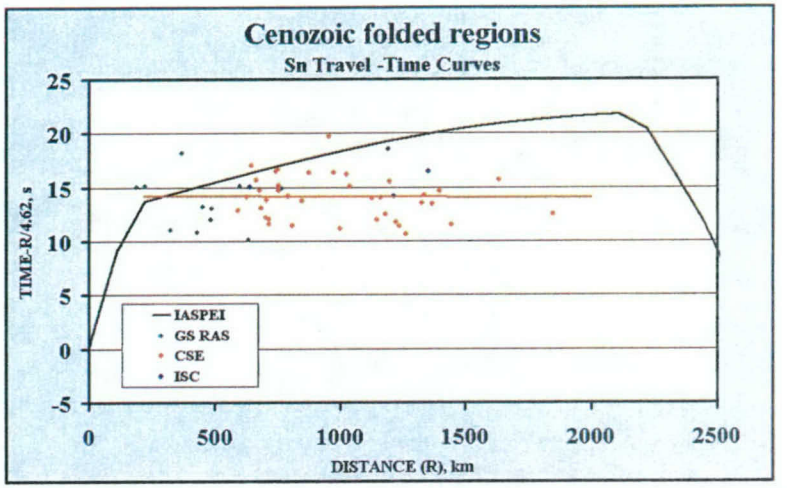
Parameters of linear regression equations for the travel-time tables developed are collected in Table 9. Figure 5 presents regional travel-time curves in the reduced scale.

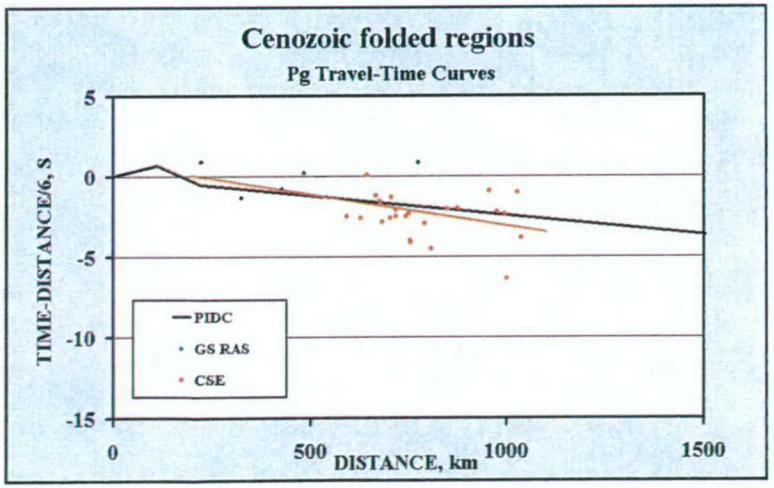
Table 9. Parameters of Travel-Time Curves Developed for Cenozoic Folded Regions.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	200-990	8.0	8.20	0.41	0.0018	0.0006	91	0.32	1.2
	991-2000	8.0	10.88	0.88	0.0048	0.0006	51	0.75	1.1
Sn	200-2000	4.62	14.19	0.82	0.0001	0.0009	51	0.01	2.1
Pg	200-1100	6.0	0.77	1.04	0.0039	0.0014	29	0.49	1.4
Lg	220-2200	3.5	2.86	2.42	0.0077	0.0021	167	0.13	5.0







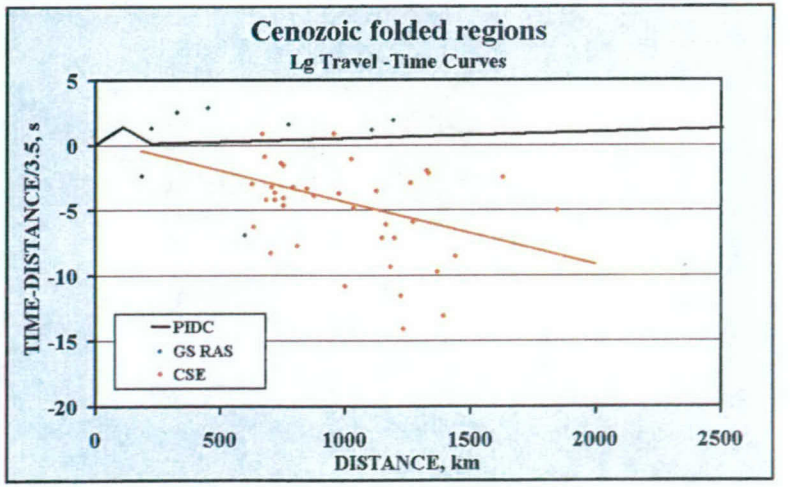


Figure 5. Travel-Time Curves for Cenozoic Folded Regions.

2.6 KAZAKH MASSIF.

To develop travel-time tables for this region we used data on arrival times from temporary stations of the Complex Seismological Expedition (located within the Kazakh massif) as well as data from station bulletins of the basic teleseismic network of the GS RAS.

It was possible to measure arrival times for stations of the CSE located in Northern and Eastern Kazakhstan (including stations in Caucasus, Transcaucasia, Northern Tien-Shan and Central Asia regions, such as BRV&, BRV, CHKA&, ZERE&, VOST& - surrogates of BRVK (station of the IMS auxiliary network); NOVT& - surrogate of AKTO (station of the IMS auxiliary network); SKAL&, UKGK& - surrogate of MAK (station of the IMS primary network) as well as some stations in Northern Tien-Shan, Central Asia and Altai regions.

These measurements were supplemented by data on P and S wave arrival times from station bulletins of the basic teleseismic network of the GS RAS (including SEM – surrogate of KURK (station of the IMS auxiliary network)).

Data on calibration events for the Kazakh massif used for travel-time table development is presented in Table 10.

Table 10. Calibration Events for Kazakh Massif.

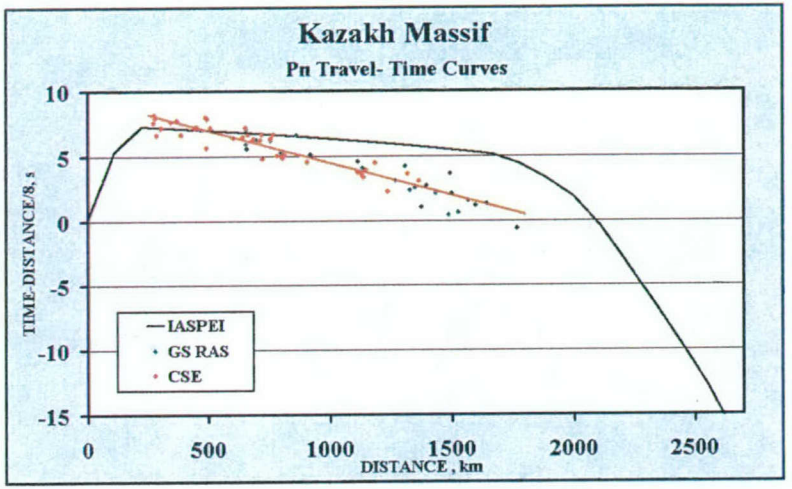
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	Deg. N	deg. E
1.	Chagan, hole 1004	65/01/15	STS, Balapan	6	0	0.79	49.935	79.0094
4.	Region-5	72/11/24	Kustanay	10	0	0.23	51.842	64.210
5.	Meridian-3	73/08/15	Chimkent	2	0	0.02	42.775	67.408
6.	Meridian-1	73/08/28	Tselinograd	3	0	0.04	50.527	68.323
7.	Meridian-2	73/09/19	Chimkent	3	0	0.18	45.758	67.825
8.	Batholith-2	87/10/03	Aktyubinsk	15	15	0.03	47.60	56.20
9.		64/11/16	STS, Degelen	6	0	0.2	49.8087	78.1334
10.		65/11/21	STS, Degelen	4	58	0.0	49.8192	78.0636
11.		66/03/20	STS, Degelen	5	50	0.3	49.7616	78.0636
12.		66/06/29	STS, Degelen	6	58	0.5	49.7616	78.0636
13.		66/10/19	STS, Degelen	3	57	59.9	49.7471	78.0205
14.		67/02/26	STS, Degelen	3	57	59.8	49.7457	78.0823
15.		67/10/17	STS, Degelen	5	4	0.2	49.7809	78.0038
16.		68/09/29	STS, Degelen	3	43	0.0	49.8120	78.1219
17.		69/03/07	STS, Degelen	8	26	59.8	49.8215	78.0627
18.		70/01/29	STS, Degelen	7	3	0.0	49.7956	78.1239
19.		70/06/28	STS, Degelen	1	58	0.0	49.8015	78.1068
20.		71/04/25	STS, Degelen	3	32	59.9	49.7685	78.0339
21.		71/12/30	STS, Degelen	6	21	0.2	49.7600	78.0371
22.		72/06/07	STS, Degelen	1	28	0.0	49.8268	78.1155
23.		72/12/10	STS, Degelen	4	27	0.0	49.8194	78.0582
24.		68/06/19	STS, Balapan	5	5	59.8	49.9803	78.9855
25.		69/11/30	STS, Balapan	3	32	59.7	49.9243	78.9558
26.		71/06/30	STS, Balapan	3	56	59.8	49.9460	78.9805
27.		72/02/10	STS, Balapan	5	3	0.0	50.0243	78.8781
28.		72/11/02	STS, Balapan	1	27	0.2	49.9270	78.8173
29.		72/12/10	STS, Balapan	4	27	10.0	50.0270	78.9956

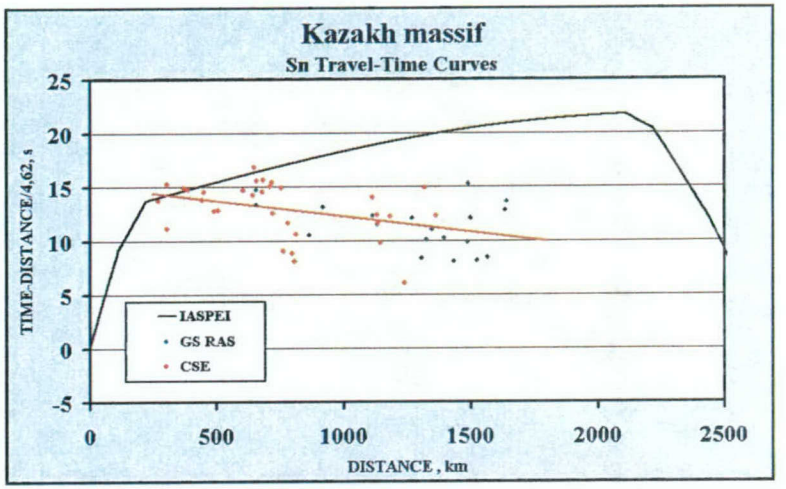
Parameters of linear regression equations for the travel-time tables developed are collected in Table 11. Figure 6 presents regional travel-time curves in the reduced scale.

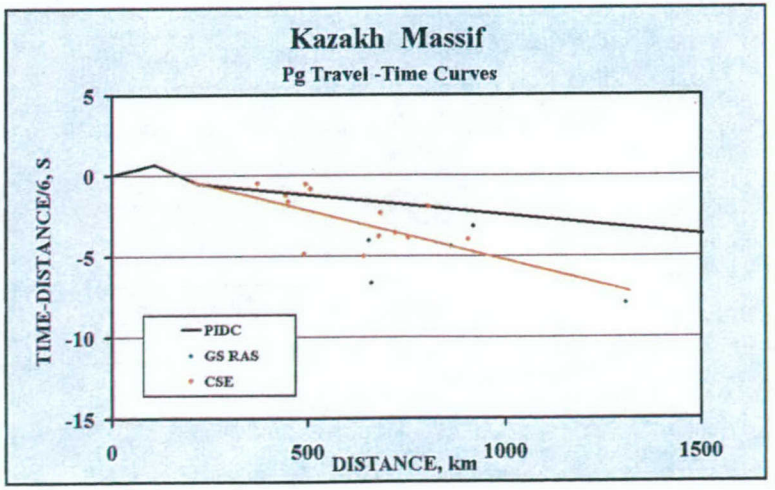
Table 11. Parameters of the Travel-Time Curves Developed for Kazakh Massif.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	200-1800	8.0	9.42	0.22	0.0050	0.0002	64	0.94	0.7
Sn	200-1800	4.62	15.10	0.82	0.0029	0.0008	51	0.47	2.3
Pg	300-1200	6.0	1.13	2.80	0.0074	0.0030	14	0.57	2.8
Lg	300-2000	3.5	-2.80	3.16	0.0026	0.0025	20	0.24	4.8







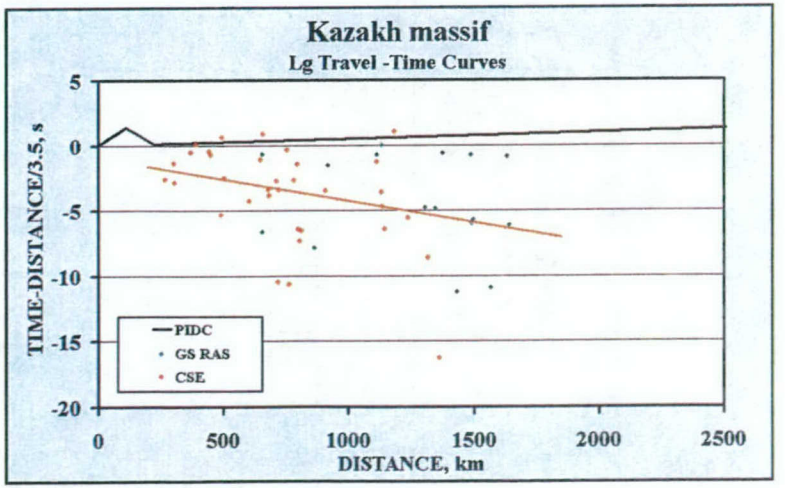


Figure 6. Travel-Time Curves for Kazakh Massif.

2.7 WEST-SIBERIAN PLATFORM.

There were almost no seismic stations within the low seismicity West-Siberian platform. To develop travel-time tables for this platform we used data from basic and temporary stations located at folded edges of this platform. PNEs conducted within the West-Siberian platform were used as calibration events. Recording stations included stations of the GS RAS: NRI (station of the IMS primary network), SVE and ARU (station of the IMS auxiliary network), NVS and ELT – surrogates of ZAL (station of the IMS primary network); temporary stations of the CSE located at Northern Caucasus, Altai and Sayan regions (including surrogates of BRVK, AKTO and KURK (stations of the IMS auxiliary network).

Data on calibration events for Kazakh massif used for table development is presented in Table 12.

Table 12. Calibration Events for West-Siberian Platform.

No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Chagan, hole 1004	65/01/15	STS, Balapan	6	0	0.79	49.935	79.0094
2.	Globe-4	71/07/02	Komi	17	0	1.13	67.283	63.467
3.	Region-5	72/11/24	Kustanay	10	0	0.23	51.842	64.210
4.	Meridian-1	73/08/28	Tselinograd	3	0	0.04	50.527	68.323
5.	Meridian-2	73/09/19	Chimkent	3	0	0.18	45.758	67.825
6.	Horizont-2	74/08/14	Yamalo-Nenetsky	15	0	0.19	68.903	75.823
7.	Horizont-1	74/08/29	Komi	15	0	0.39	67.085	62.625
8.	Kraton-2	78/09/21	Krasnoyarsk	15	0	0.19	66.598	86.210
9.	Kraton-1	78/10/17	Khanty-Mansiysk	14	0	0.16	63.185	63.432
10.	Kimberlite-1	79/10/04	Khanty-Mansiysk	16	0	0.03	60.675	71.455
11.	Quartz-3	84/08/25	Khanty-Mansiysk	19	0	0.33	61.90	72.10
12.	Quartz-4	84/09/17	Kemerovo	21	0	0.03	55.834	87.526
13.	Rubin-2	88/08/22	Yamalo-Nenetsky	16	20	0.07	66.280	78.491
14.		64/11/16	STS, Degelen	6	0	0.2	49.8087	78.1334
15.		65/11/21	STS, Degelen	4	58	0.0	49.8192	78.0636
16.		66/03/20	STS, Degelen	5	50	0.3	49.7616	78.0636
17.		66/06/29	STS, Degelen	6	58	0.5	49.7616	78.0636

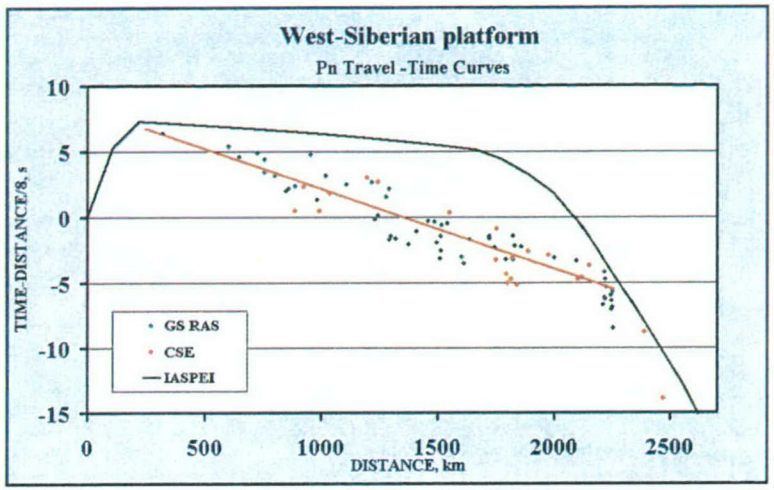
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
18.		66/10/19	STS, Degelen	3	57	59.9	49.7471	78.0205
19.		67/02/26	STS, Degelen	3	57	59.8	49.7457	78.0823
20.		67/10/17	STS, Degelen	5	4	0.2	49.7809	78.0038
21.		68/09/29	STS, Degelen	3	43	0.0	49.8120	78.1219
22.		69/03/07	STS, Degelen	8	26	59.8	49.8215	78.0627
23.		70/01/29	STS, Degelen	7	3	0.0	49.7956	78.1239
24.		70/06/28	STS, Degelen	1	58	0.0	49.8015	78.1068
25.		71/04/25	STS, Degelen	3	32	59.9	49.7685	78.0339
26.		71/12/30	STS, Degelen	6	21	0.2	49.7600	78.0371
27.		72/06/07	STS, Degelen	1	28	0.0	49.8268	78.1155
28.		72/12/10	STS, Degelen	4	27	0.0	49.8194	78.0582
29.		68/06/19	STS, Balapan	5	5	59.8	49.9803	78.9855
30.		69/11/30	STS, Balapan	3	32	59.7	49.9243	78.9558
31.		71/06/30	STS, Balapan	3	56	59.8	49.9460	78.9805
32.		72/02/10	STS, Balapan	5	3	0.0	50.0243	78.8781
33.		72/11/02	STS, Balapan	1	27	0.2	49.9270	78.8173
34.		72/12/10	STS, Balapan	4	27	10.0	50.0270	78.9956

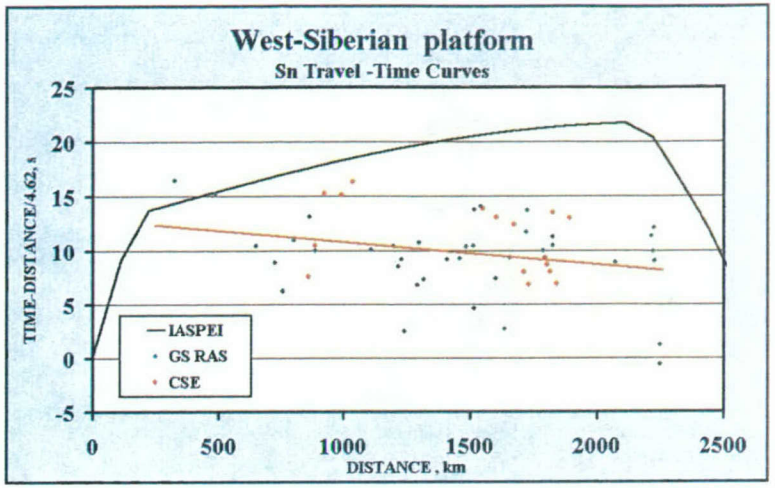
Parameters of linear regression equations for the travel-time tables developed are collected in Table 13. Figure 7 presents regional travel-time curves in the reduced scale.

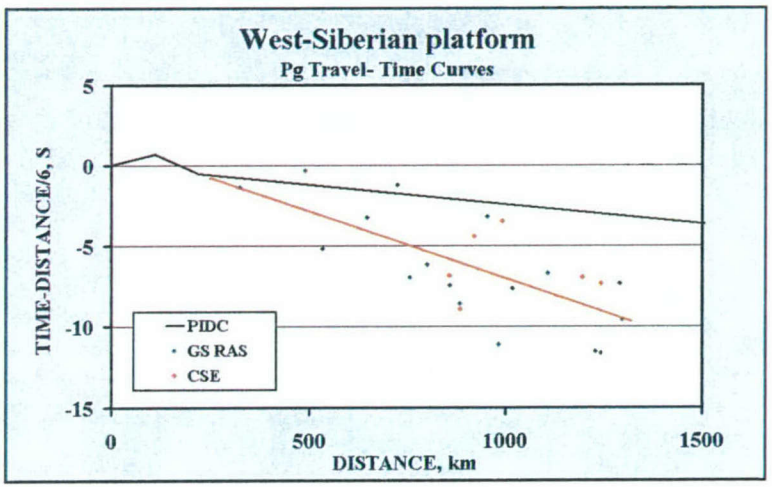
Table 13. Parameters of the Travel-Time Curves Developed for West-Siberian Platform.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	220-2200	8.0	8.22	0.22	0.0061	0.0002	70	0.90	1.3
Sn	220-2200	4.62	12.82	1.47	0.0021	0.0010	56	0.28	3.5
Pg	250-1200	6.0	1.26	2.17	0.0083	0.0022	22	0.64	2.4
Lg	220-2200	3.5	-2.96	2.77	0.0038	0.0018	44	0.30	6.3







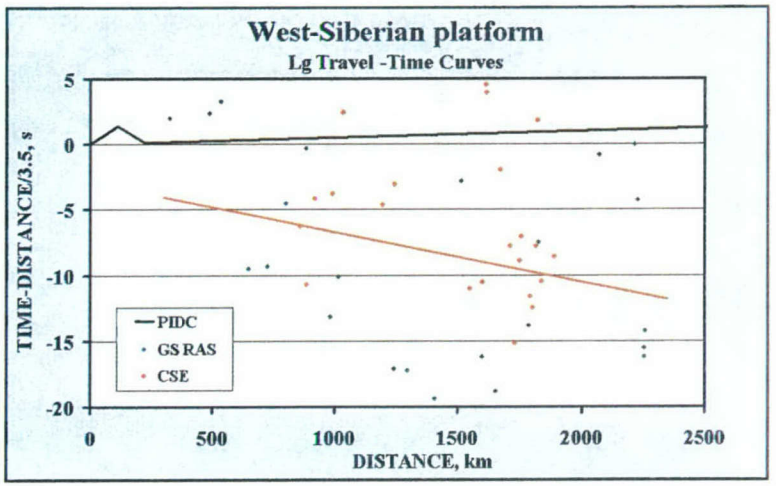


Figure 7. Travel-Time Curves for West-Siberian Platform.

2.8 ALTAI AND SAYAN REGION.

To develop travel-time tables for this region we used data on arrival times from seismic stations of the Experimental Seismological Expedition of the Institute of Geology and Geophysics of the Siberian Branch of the RAS (with Data Collection Center in the city of Novosibirsk). These stations included, among others, stations NVS and ELT – surrogates of ZAL (station of the IMS primary network), stations IRK and MOY of the Baikal Experimental Seismological Expedition (with Data Collection Center in the city of Irkutsk) – surrogates of TLY (station of the IMS auxiliary network) as well as CSE's temporary seismic stations of the Altai-Sayan and Irkutsk groups.

Data on calibration events for Altai and Sayan region used for table development is presented in Table 14.

Table 14. Calibration Events for Altai and Sayan Region.

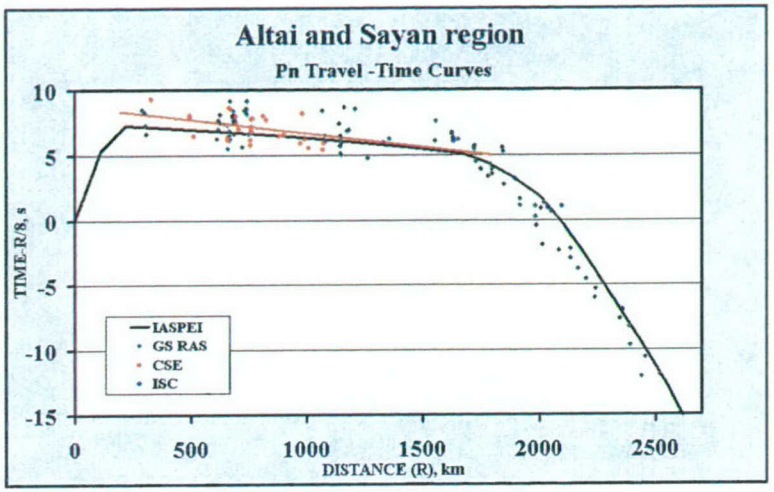
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Meteorite-5	77/08/10	Buryatiya	22	0	0.10	50.955	110.983
2.	Meteorite-4	77/09/10	Irkutsk	16	0	0.18	57.251	106.551
3.	Batholith-1	80/11/01	Evenkiya	13	0	0.42	60.80	97.55
4.	Rift-3	82/07/30	Buryatiya	21	0	0.00	53.80	104.15
5.	Quartz-4	84/09/17	Kemerovo	21	0	0.03	55.834	87.526
6.		64/11/16	STS, Degelen	6	0	0.2	49.8087	78.1334
7.		65/11/21	STS, Degelen	4	58	0.0	49.8192	78.0636
8.		66/03/20	STS, Degelen	5	50	0.3	49.7616	78.0636
9.		66/06/29	STS, Degelen	6	58	0.5	49.7616	78.0636
10.		66/10/19	STS, Degelen	3	57	59.9	49.7471	78.0205
11.		67/02/26	STS, Degelen	3	57	59.8	49.7457	78.0823
12.		67/10/17	STS, Degelen	5	4	0.2	49.7809	78.0038
13.		68/09/29	STS, Degelen	3	43	0.0	49.8120	78.1219
14.		69/03/07	STS, Degelen	8	26	59.8	49.8215	78.0627
15.		70/01/29	STS, Degelen	7	3	0.0	49.7956	78.1239
16.		70/06/28	STS, Degelen	1	58	0.0	49.8015	78.1068
17.		71/04/25	STS, Degelen	3	32	59.9	49.7685	78.0339
18.		71/12/30	STS, Degelen	6	21	0.2	49.7600	78.0371
19.		72/06/07	STS, Degelen	1	28	0.0	49.8268	78.1155
20.		72/12/10	STS, Degelen	4	27	0.0	49.8194	78.0582
21.		68/06/19	STS, Balapan	5	5	59.8	49.9803	78.9855
22.		69/11/30	STS, Balapan	3	32	59.7	49.9243	78.9558
23.		71/06/30	STS, Balapan	3	56	59.8	49.9460	78.9805
24.		72/02/10	STS, Balapan	5	3	0.0	50.0243	78.8781
25.		72/11/02	STS, Balapan	1	27	0.2	49.9270	78.8173
26.		72/12/10	STS, Balapan	4	27	10.0	50.0270	78.9956

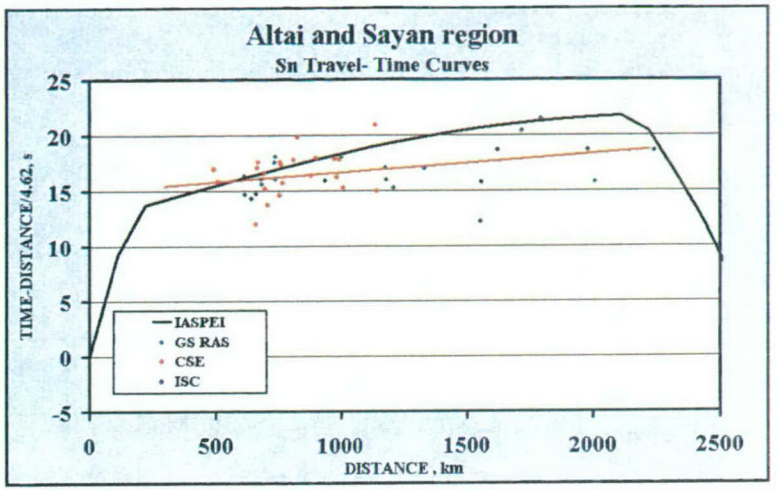
Parameters of linear regression equations for the travel-time tables developed are collected in Table 15. Figure 8 presents regional travel-time curves in the reduced scale.

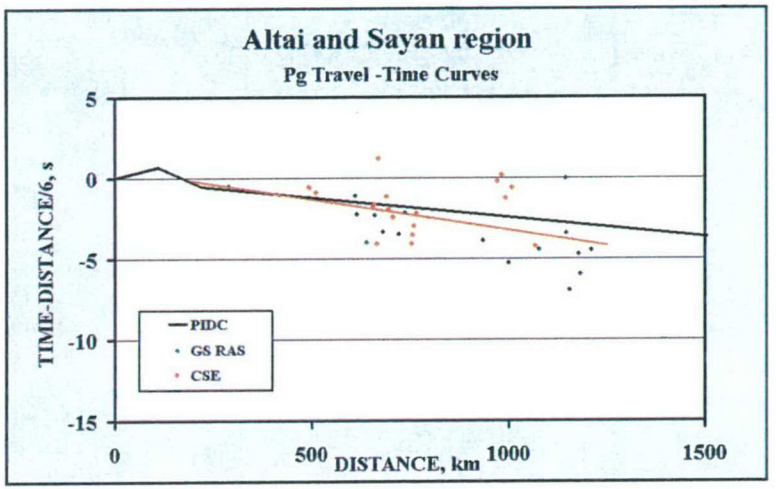
Table 15. Parameters of Travel-Time Curves Developed for Altai and Sayan Region.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	200-2200	8.0	8.71	0.24	0.0021	0.0002	113	0.66	1.0
Sn	220-2200	4.62	14.85	0.72	-0.0017	0.0006	47	0.35	2.0
Pg	200-1200	6.0	0.54	1.03	0.0038	0.0012	36	0.47	1.7
Lg	200-2200	3.5	-2.52	1.12	0.0011	0.0009	57	0.16	3.4







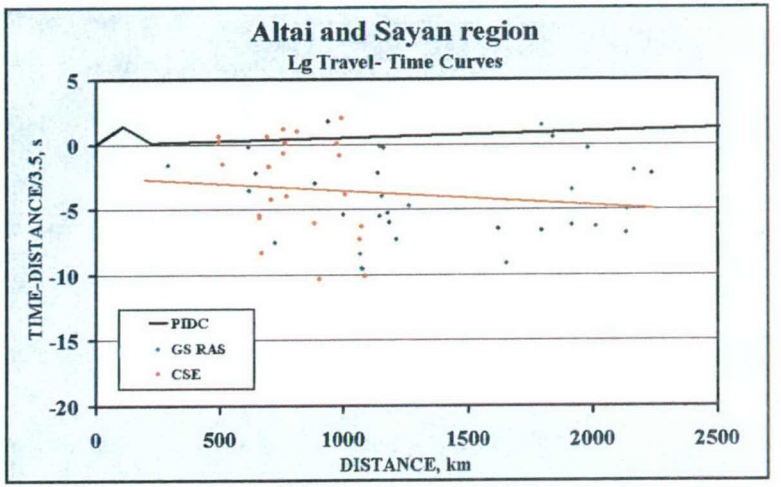


Figure 8. Travel-Time Curves for Altai and Sayan Region.

2.9 BAIKAL RIFT ZONE.

To develop travel-time tables for this region we used data on arrival times from seismic stations of the Baikal Experimental Seismological Expedition, including station BOD – surrogate of PDY (station of the IMS primary network), IRK and MOY – surrogates of TLY (station of the IMS auxiliary network) as well as CSE's temporary seismic stations of the Altai-Sayan and Irkutsk groups.

Data on calibration events for Baikal rift zone used for table development is presented in Table 16.

Table 16. Calibration Events for Baikal Rift Zone.

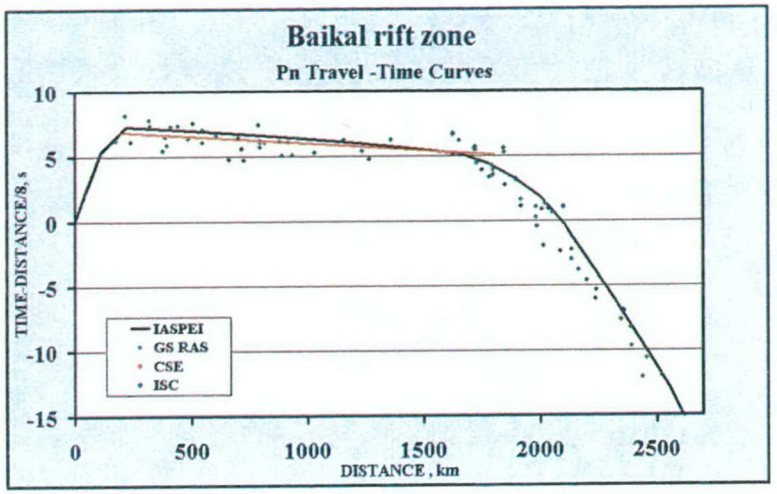
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Meteorite-5	77/08/10	Buryatiya	22	0	0.10	50.955	110.983
2.	Meteorite-4	77/09/10	Irkutsk	16	0	0.18	57.251	106.551
3.	Batholith-1	80/11/01	Evenkiya	13	0	0.42	60.80	97.55
4.	Rift-3	82/07/30	Buryatiya	21	0	0.00	53.80	104.15

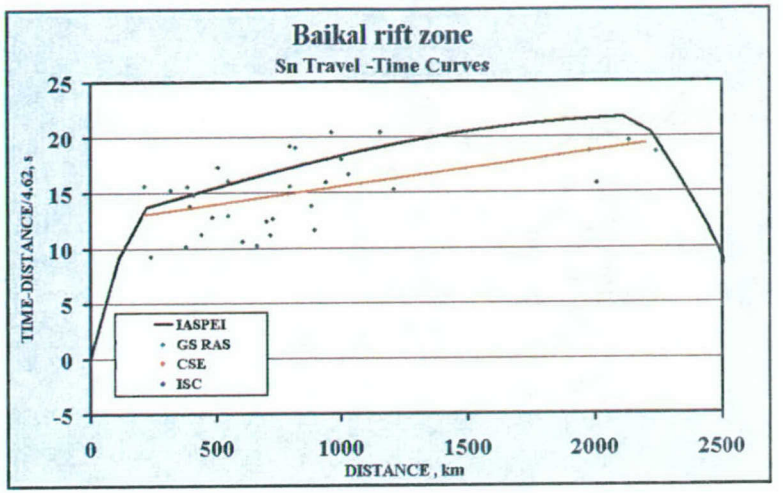
Parameters of linear regression equations for the travel-time tables developed are collected in Table 17. Figure 9 presents regional travel-time curves in the reduced scale.

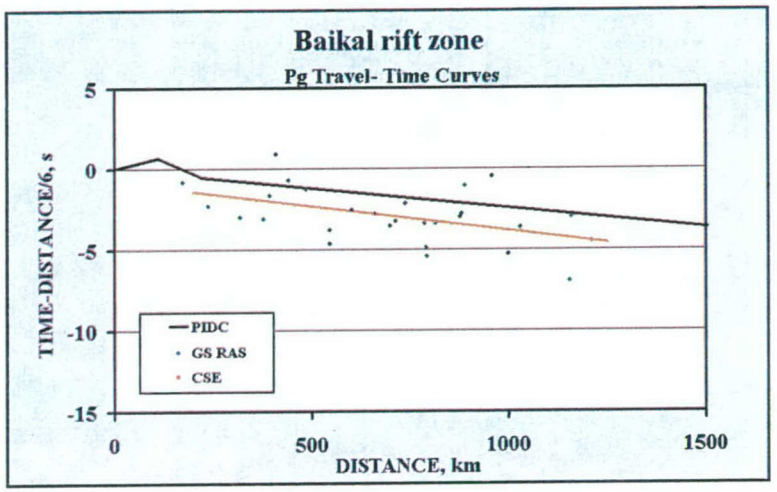
Table 17. Parameters of the Travel-Time Curves Developed for Baikal Rift Zone.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	200-2000	8.0	7.01	0.27	0.0011	0.0003	44	0.56	0.9
Sn	200-2000	4.62	12.26	0.90	-0.0032	0.0009	33	0.54	2.7
Pg	200-1200	6.0	-0.88	0.77	0.0030	0.0010	28	0.50	1.5
Lg	200-2200	3.5	-1.18	0.79	0.0016	0.0006	41	0.34	2.6







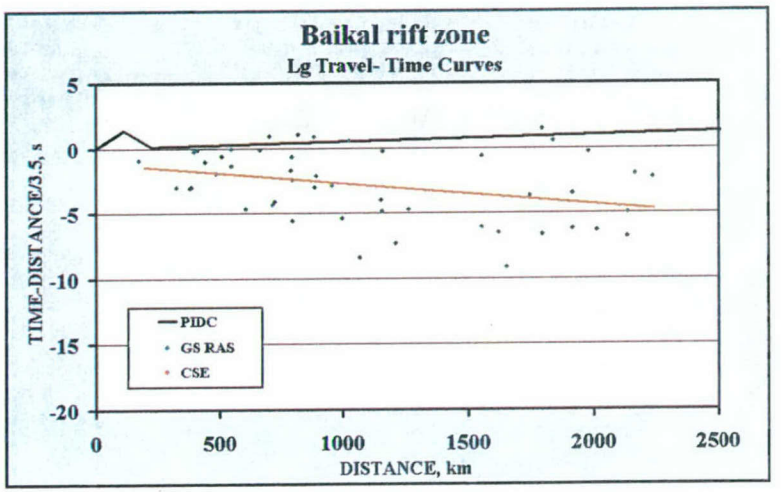


Figure 9. Travel-Time Curves for Baikal Rift Zone.

2.10 SIBERIAN PLATFORM.

To develop travel-time tables for this region we used data on arrival times from the seismic stations of the GS RAS: NRI (station of the IMS primary network), TIK and YAK (stations of the IMS auxiliary network), NVS and ELT (surrogates of ZAL (station of the IMS primary network)), BOD (surrogate of PDY (station of the IMS auxiliary network) as well as from stations of Baikal, Yakutsk and Yuzhno-Sakhalinsk regional networks and CSE's temporary stations.

Data on calibration events for the Siberian platform used for table development is presented in Table 18.

Table 18. Calibration Events for Siberian Platform.

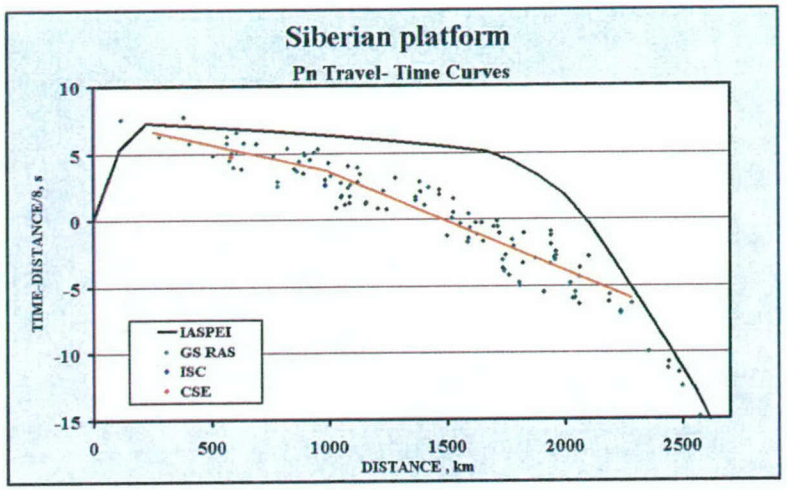
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Horizont-4	75/08/12	Yakutiya	15	0	0.60	70.763	126.953
2.	Horizont-3	75/09/29	Taimyr	11	0	0.43	69.578	90.337
3.	Oka, hole 42	76/11/05	Yakutiya	3	59	59.98	61.458	112.860
4.	Meteorite-2	77/07/26	Taimyr	17	0	0.22	69.575	90.375
5.	Meteorite-5	77/08/10	Buryatiya	22	0	0.10	50.955	110.983
6.	Meteorite-3	77/08/20	Evenkiya	22	0	0.78	64.108	99.558
7.	Meteorite-4	77/09/10	Irkutsk	16	0	0.18	57.251	106.551
8.	Kraton-4	78/08/09	Yakutiya	18	0	0.79	63.678	125.522
9.	Kraton-3	78/08/24	Yakutiya	18	0	0.35	65.925	112.338
10.	Kimberlite-4	79/08/12	Yakutiya	18	0	0.21	61.803	122.430
11.	Kimberlite-3	79/09/06	Evenkiya	18	0	0.31	64.110	99.562

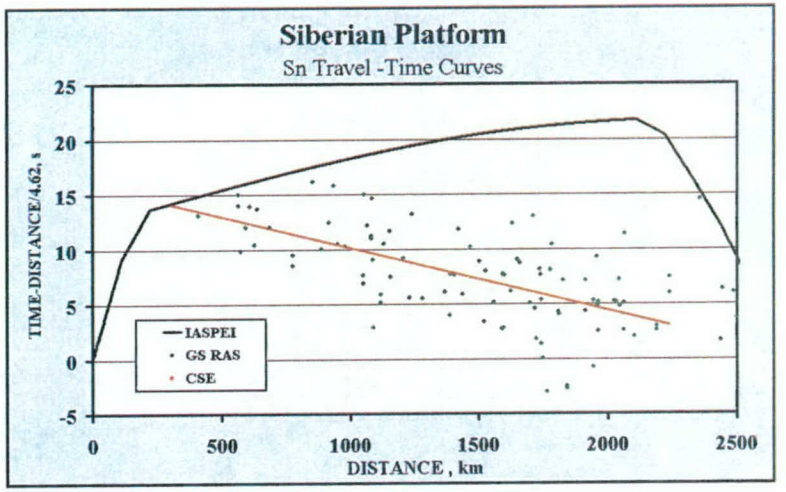
Parameters of linear regression equations for the travel-time tables developed are collected in Table 19. Figure 10 presents regional travel-time curves in the reduced scale.

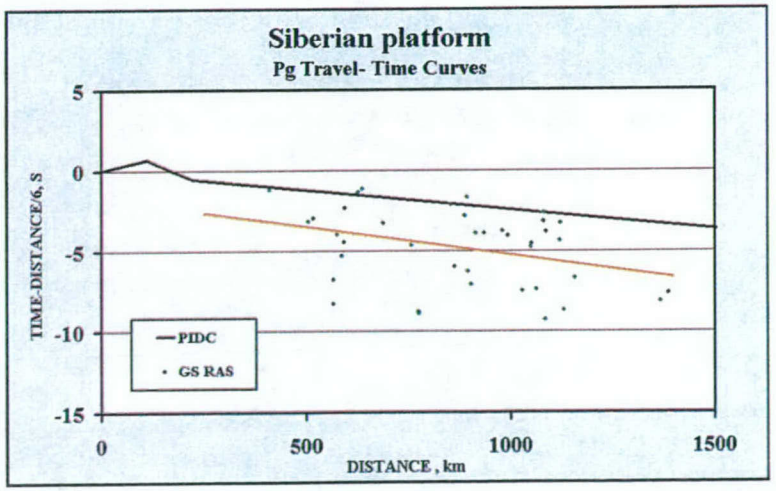
Table 19. Parameters of the Travel-Time Curves Developed for Siberian Platform

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	220-999	8.0	7.75	0.74	0.0043	0.0010	33	0.62	1.1
	1000-2200	8.0	10.89	0.69	0.0074	0.0004	80	0.90	1.3
Sn	200-2000	4.62	15.78	1.11	0.0057	0.0007	91	0.63	3.3
Pg	200-1100	6.0	-1.80	1.36	0.0035	0.0015	39	0.36	2.3
Lg	220-2200	3.5	-4.57	1.28	0.0002	0.0008	82	0.01	4.1







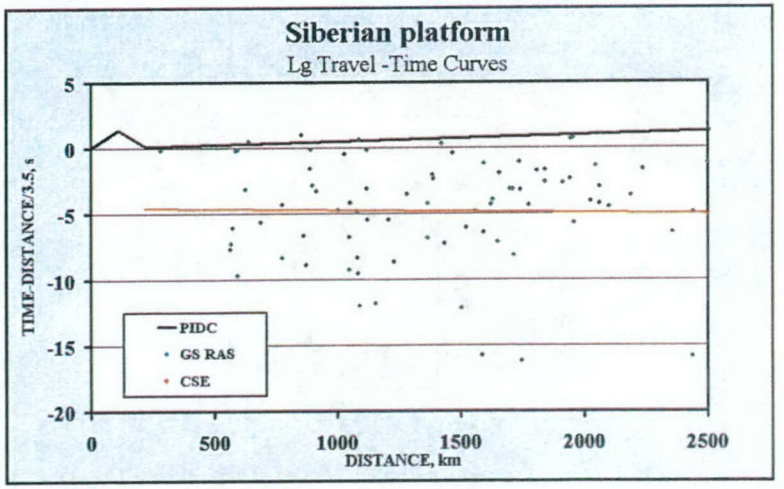


Figure 10. Travel-Time Curves for Siberian Platform.

2.11 NORTH EAST TERRITORY AND CHUKOT PENINSULA.

To develop travel-time tables for these regions we used data on arrival times from the seismic stations TIK, MA2, SEY (stations of the IMS auxiliary network) of the GS RAS, stations of Yakutsk regional network located to the east of the Lena river (with Data Collection Center in the city of Yakutsk) and stations of Magadan regional network (with Data Collection Center in the city of Magadan).

Data on calibration events for North East territory and Chukot Peninsula used for table development is presented in Table 20.

Table 20. Calibration Events for North-East Territory and Chukot Peninsula.

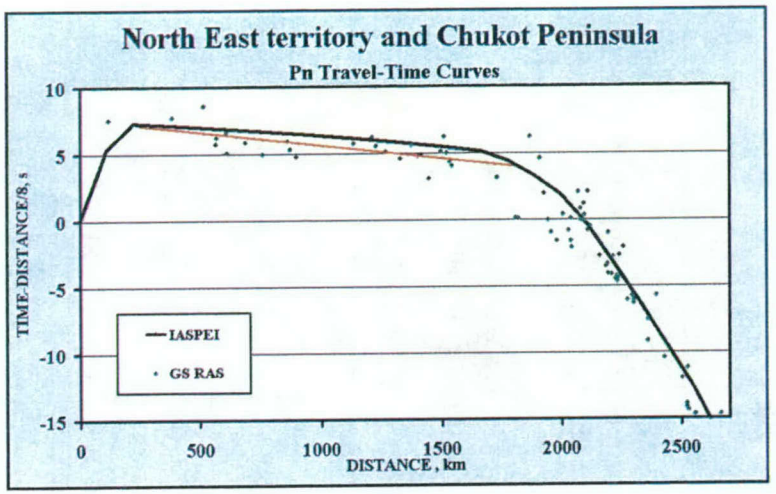
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Horizont-4	75/08/12	Yakutiya	15	0	0.60	70.763	126.953
2.	Kraton-4	78/08/09	Yakutiya	18	0	0.79	63.678	125.522
3.	Kimberlite-4	79/08/12	Yakutiya	18	0	0.21	61.803	122.430
4.	Long Shot	65/10/29	Amchitka Island	21	0	0.08	51.4381	179.1826
5.	Milrow	69/10/02	Amchitka Island	22	6	0.04	51.4171	179.1823
6.	Cannikin	71/11/06	Amchitka Island	22	0	0.06	51.4719	179.1069

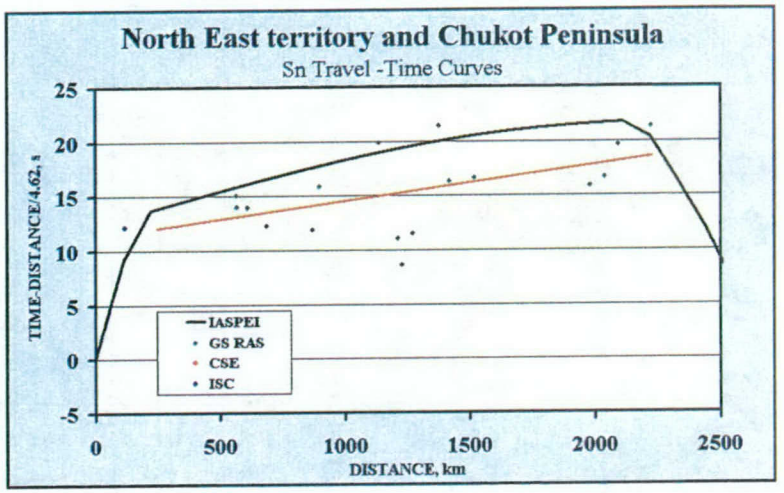
Parameters of linear regression equations for the travel-time tables developed are collected in Table 21. Figure 11 presents regional travel-time curves in the reduced scale.

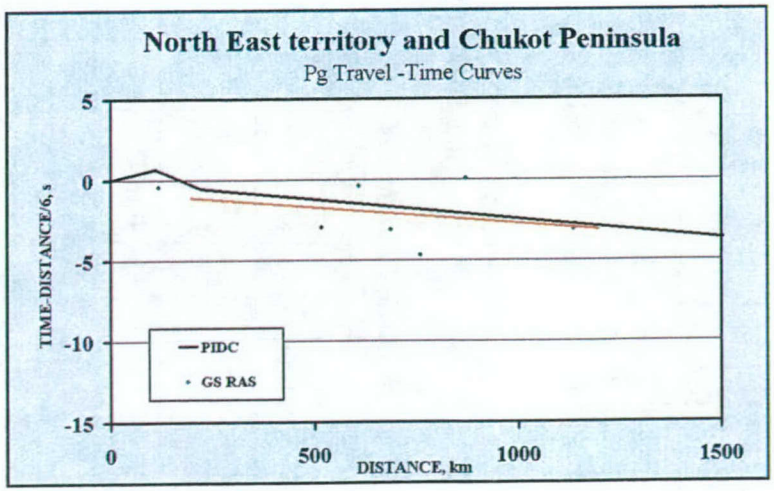
Table 21. Parameters of the Travel-Time Curves Developed for North-East Territory and Chukot Peninsula.

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	200-2200	8.0	7.57	0.51	0.0020	0.0004	26	0.68	0.9
Sn	220-2200	4.62	11.17	1.73	-0.0033	0.0013	18	0.54	3.2
Pg	200-1200	6.0	-0.76	1.77	0.0020	0.0024	7	0.35	1.9
Lg	200-2200	3.5	-0.71	2.09	0.0018	0.0013	21	0.29	4.3







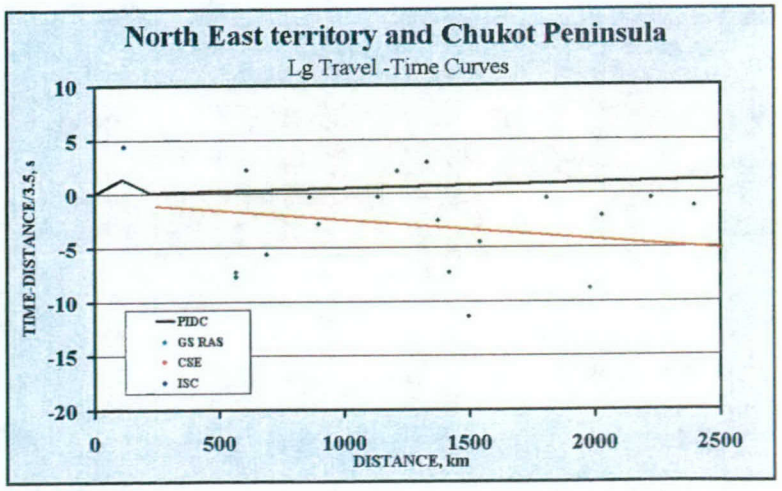


Figure 11. Travel-Time Curves for North-East Territory and Chukot Peninsula.

2.12 KAMCHATKA-KURIL-SAKHALIN REGIONS.

To develop travel-time tables for these regions we used data on arrival times which was obtained from the regional seismological centers of the GS RAS: Magadan (with Data Collection Center in the city of Magadan), Kamchatka (with Data Collection Center in the city of Petropavlovsk-Kamchatskiy) and Sakhalin (with Data Collection Center in the city of Yuzhno-Sakhalinsk), including station PET – surrogate of PET (station of the IMS primary network; YSS and MA1 – surrogates of YSS and MA2 (stations of the IMS auxiliary network)).

Data on calibration events for Kamchatka-Kuril-Sakhalin territory used for table development is presented in Table 22.

Table 22. Calibration Events for Kamchatka-Kuril-Sakhalin Territory.

No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	Ss	deg. N	deg. E
1.	Long Shot	65/10/29	Amchitka Island	21	0	0.08	51.4381	179.1826
2.	Milrow	69/10/02	Amchitka Island	22	6	0.04	51.4171	179.1823
3.	Cannikin	71/11/06	Amchitka Island	22	0	0.06	51.4719	179.1069

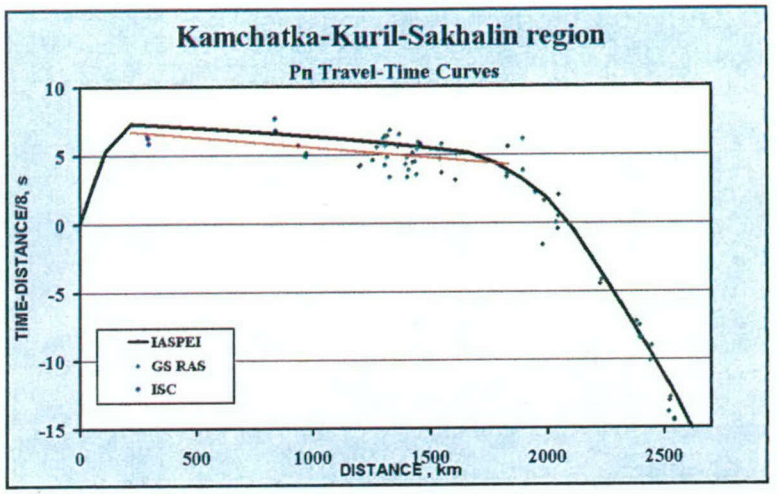
Due to the lack of calibration events, the travel-time tables were developed for Pn and Sn phases only.

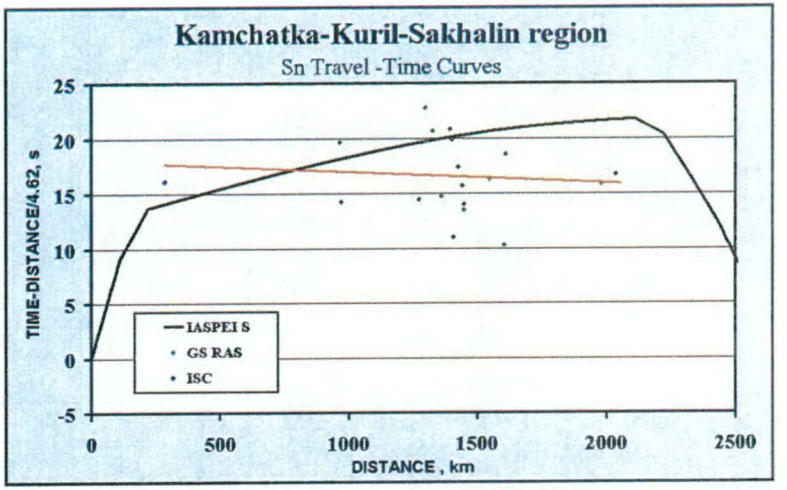
Parameters of linear regression equations for the travel-time tables developed are collected in Table 23. Figure 12 presents regional travel-time curves in the reduced scale.

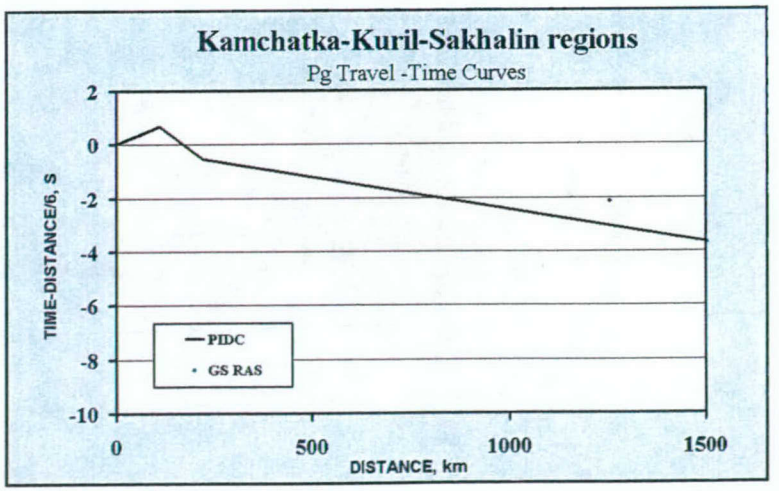
Table 23. Parameters of the Travel-Time Curves Developed for Kamchatka-Kuril-Sakhalin Regions

Basic Equation: $T-R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	R	SD, sec
Pn	280-1800	8.0	6.99	0.57	0.0015	0.0004	43	0.47	1.0
Sn	280-2000	4.62	17.89	2.96	0.0010	0.0021	21	0.10	3.3







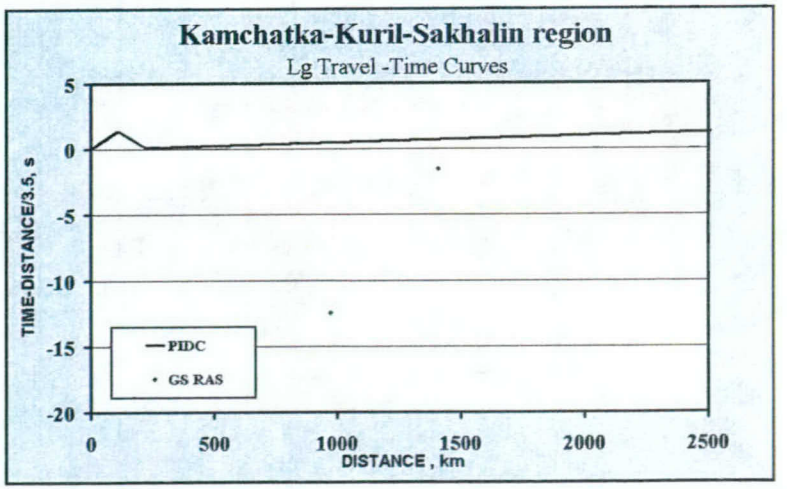


Figure 12. Travel-Time Curves for Kamchatka-Kuril-Sakhalin Regions.

2.13 AMUR AND MARITIME TERRITORY.

To develop travel-time tables for this territory we used data on arrival times which was obtained from the Sakhalin regional seismological center of the GS RAS (with Data Collection Center in the city of Yuzhno-Sakhalinsk), including station VLA – surrogate of USK (station of the IMS primary network) and stations NKL and ZEA – surrogates of URG (station of the IMS auxiliary network).

Data on calibration events for Amur and Maritime territory used for travel-time table development is presented in Table 24.

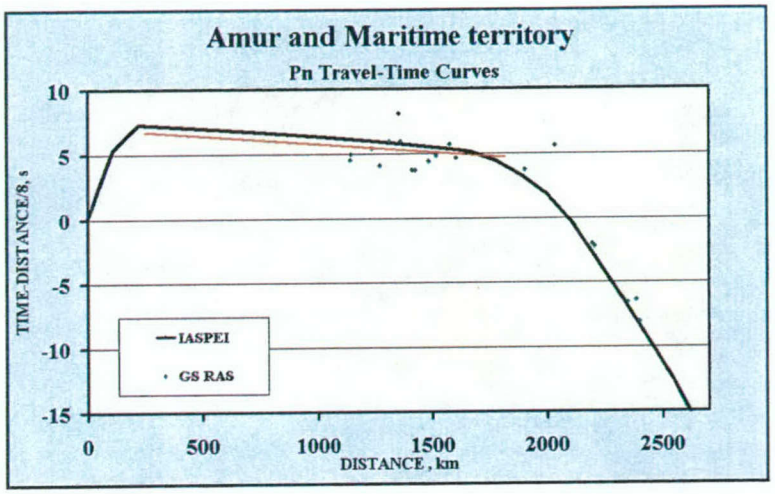
Table 24. Calibration Events for Amur and Maritime Territory.

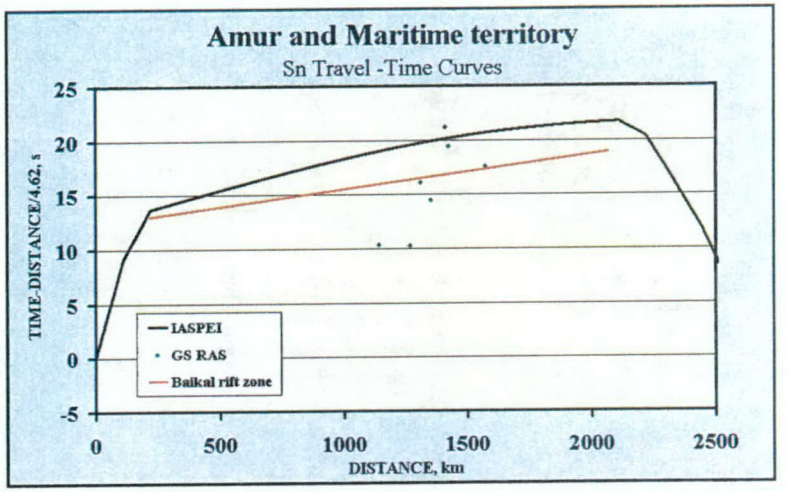
No.	Name	Date	Region	Origin Time			Lat.	Lon.
		yy/mm/dd		hh	mm	ss	deg. N	deg. E
1.	Meteorite-5	77/08/10	Buryatiya	22	0	0.10	50.955	110.983
2.	Meteorite-4	77/09/10	Irkutsk	16	0	0.18	57.251	106.551
3.	Rift-3	82/07/30	Buryatiya	21	0	0.00	53.80	104.15

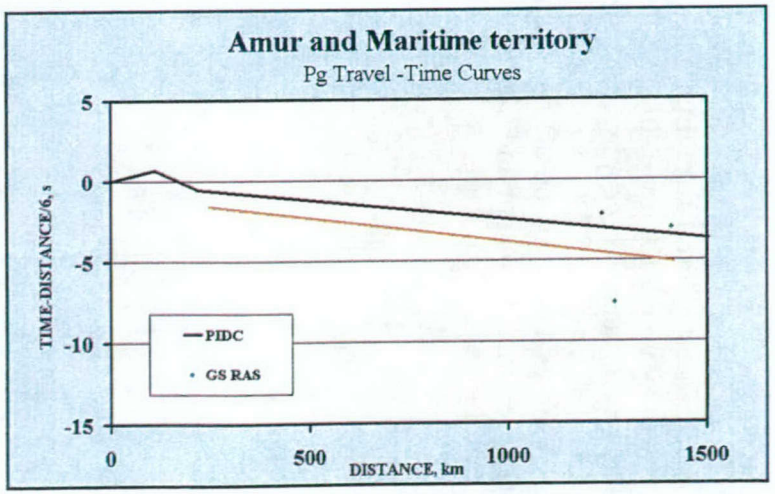
For lack of calibration events and data on arrival times it was not possible to immediately develop travel-time tables for this territory. It was possible only to obtain data on travel times for the limited distance range as of from 1000 to 1500 km.

Taking into account a tectonic similarity of this territory with the Baikal rift zone (both regions include provinces of pre-rift regime and continental rifts) as well as data obtained on travel times, it was assumed that travel-time tables for Amur and Maritime territory and for Baikal rift zone may be considered as geophysically similar.

Figure 13 shows a comparison of travel-time tables developed for Baikal rift zone and collected data on travel times for Amur and Maritime territory.







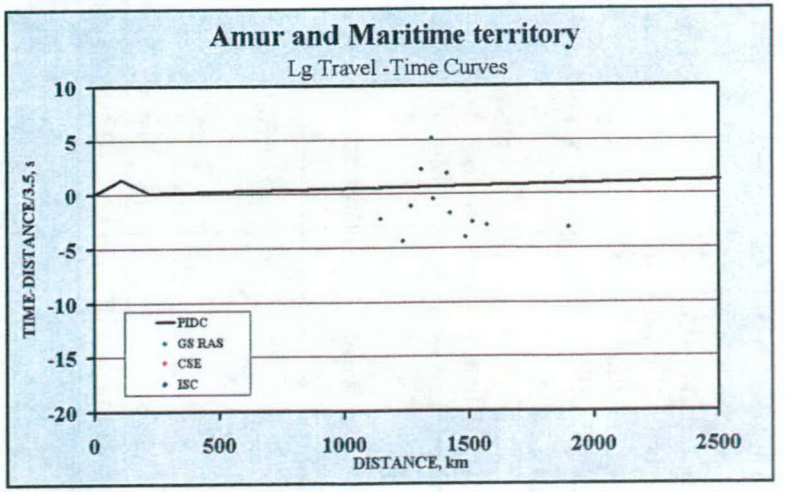


Figure 13. Collected Data on Travel Times for Amur and Maritime Territory.

SECTION 3
ANALYSIS OF DEVELOPED 1-D TRAVEL-TIME TABLES FOR DIFFERENT GEOTECTONIC PROVINCES OF NORTHERN EURASIA

The major practical goal of this analysis of travel-time tables developed for different geotectonic provinces of Northern Eurasia is to construct generalized travel-time tables for more extended (than presented in Section 2 of this report) Northern Eurasian provinces based on seismic and tectonic similarity. Province unification was carried out taking into account geological age and values of propagation velocities for regional seismic waves.

The first generalized group of provinces includes platform regions: Central-East-European platform, West-Siberian and Siberian platforms. The values of Pn apparent velocities for these regions are within 8.2-8.3 km/sec in the range from 200 to 1100 km, and 8.4-8.6 km/sec for higher distances (up to 2000-2200 km). The value of apparent velocity of Sn waves is 4.8 km/sec for all the regions within the distance range studied.

The second generalized group of provinces includes the regions of paleozoic age, such as Ural folded belt, Kazakh massif and young plates: Timan-Pechora, Scythian and Turanian plates. For these regions the value of Pn apparent velocity is 8.3 km/sec and the values of Sn velocity are within 4.5-4.6 km/sec for the distance range from 200 to 2000 km.

The third generalized group of provinces includes tectonic active regions: Cenozoic folded regions (Crimea, Caucasus, Kopet-Dagh, Altai and Sayan territory, Baikal rift zone, Amur and Maritime territory, North East territory and Chukot Peninsula, Kamchatka-Kuril-Sakhalin region). For these regions the values of Pn apparent velocity are within 8.1-8.2 km/sec and the values of Sn velocity are within 4.4-4.5 km/sec for the distance range from 200 to 2000 km.

The values of Pg apparent velocities for the generalized first and second groups of provinces are within 6.2-6.3 km/sec and for the third generalized group of provinces 6.0-6.1 km/sec.

The values of Lg apparent velocities seem to the same for all three generalized groups of provinces and are within 3.5-3.6 km/sec.

To confirm the possibility of constructing generalized travel-time tables for three extended Northern Eurasia provinces we carried out statistical studies of the linear regressions developed for the specific regions (Table 1) making up the three extended geotectonic provinces.

The linear regression equations developed were compared by three sets of parameters (Storm, 1970):

- Residual standard deviations using Fisher criteria $F_{_\alpha;m1,m2}$;
- Values of slopes B_1 and B_2 using Student criteria $t_{\alpha;m}$;
- Values of intercepts A_1 and A_2 using Student criteria $t_{\alpha;m}$.

The null hypothesis is that the regressions are the same within the three generalized provinces. To construct generalized travel-time tables it is required that all three criteria are satisfied.

Data on comparison of linear regressions representing travel-time tables of Pn waves for platform regions of Northern Eurasia are listed in Table 25.

Table 25. Data on Comparison of Linear Regressions.

	Central –East-European territory	West-Siberian platform	Siberian platform
Central – East-European territory		$F=1.02<F_{0.01;195,68}=1.65$	$F=1.03<F_{0.01;193,111}=1.36$
		$t_B=2.32<t_{0.01,263}=2.58$	$t_B=1.87<t_{0.01,304}=2.58$
		$t_A=0.03< t_{0.01,263}=2.58$	$t_A=0.06< t_{0.01,304}=2.58$
West-Siberian platform	$F=1.02<F_{0.01;195,68}=1.65$		$F=1.01<F_{0.01;68,111}=1.69$
	$t_B=2.32<t_{0.01,263}=2.58$		$t_B=1.14<t_{0.01,179}=2.58$
	$t_A=0.03< t_{0.01,263}=2.58$		$t_A=0.12< t_{0.01,179}=2.58$
Siberian platform	$F=1.03<F_{0.01;193,111}=1.36$	$F=1.01<F_{0.01;68,111}=1.69$	
	$t_B=1.87<t_{0.01,304}=2.58$	$t_B=1.14<t_{0.01,179}=2.58$	
	$t_A=0.06< t_{0.01,304}=2.58$	$t_A=0.12< t_{0.01,179}=2.58$	

Analysis of data from Table 25 allows one to conclude that all three criteria are satisfied and, thus, platform regions of Northern Eurasia may be united in one generalized province.

Similar studies were carried out for other geotectonic provinces and different seismic phases. As a result we confirmed statistically our previous geophysical assumption representing Northern Eurasia territory by three extended provinces.

For the newly constructed extended geotectonic provinces we calculated corresponding travel-time tables (joining data sets for specific provinces) and modeling errors for Pn, Pg, Sn and Lg phases.

Polygon vertices for the three extended provinces are presented in Table 26. Figure 14 presents the corresponding regionalization of Northern Eurasia (1° x 1° network). Parameters of linear regression equations for the travel-time tables developed are collected in Table 27. These travel-time tables in reduced scale are illustrated by Figures 15–18. Data on modeling errors are presented in Table 28.

Table 26. Generalized Regionalization of Northern Eurasia.

No.	Region Name	Polygon Vertices, Lat. (deg. N) – Long. (deg. E)
I.	Platform areas	70-10 70-48 67-48 67-49 66-49 66-50 65-50 65-51 64-51 64-52 63-52 63-53 62-53 62-54 61-54 61-56 60-56 60-57 57-57 57-56 46-56 46-49 47-49 47-47 48-47 48-46 49-46 49-40 47-40 47-27 48-27 48-26 49-26 49-25 50-25 50-10 77-69 77-127 69-127 69-125 68-125 68-124 67-124 67-125 65-125 65-127 64-127 64-130 63-130 63-136 59-136 59-134 58-134 56-123 57-123 57-121 58-121 58-117 59-117 59-113 58-113 58-111 57-111 57-109 56-109 56-108 54-108 54-107 53-107 53-105 52-105 52-102 53-102 53-101 54-101 54-99 55-99 55-94 59-94 59-92 57-92 57-89 56-89 56-86 57-86 57-85 56-85 56-83 54-83 54-82 52-82 52-81 51-81 51-75 52-75 52-72 53-72 53-70 54-70 54-65 53-65 53-63 54-63 54-62 58-62 58-61 64-61 64-62 65-62 65-64 66-64 66-67 67-67 67-68 70-68 70-61 71-61 71-56 72-56 72-57 73-57 73-58 74-58 74-61 75-61 75-66 76-66 76-69
II.	Paleozoic massifs and young plates	77-58 77-69 76-69 76-66 75-66 75-61 74-61 74-58 73-58 73-57 72-57 72-56 71-56 71-61 70-61 70-68 67-68 67-67 66-67 66-64 65-64 65-62 64-62 64-61 58-61 58-62 54-62 54-63 53-63 53-65 54-65 54-70 53-70 53-72 52-72 52-75 51-75 51-81 46-81 46-79 45-79 45-77 44-77 44-75 43-75 43-70 44-70 44-69 45-69 45-67 44-67 44-68 42-68 42-67 43-67 43-64 38-64 38-61 37-61 37-59 38-59 38-57 39-57 39-56 38-56 38-55 37-55 37-54 39-54 39-52 40-52 40-50 41-50 41-49 42-49 42-48 43-48 43-44 44-44 44-43 45-43 45-33 46-33 46-30 47-30 47-40 49-40 49-46 48-46 48-47 47-47 47-49 46-49 46-56 57-56 57-57 60-57 60-56 61-56 61-54 62-54 62-53 63-53 63-52 64-52 64-51 65-51 65-50 66-50 66-49 67-49 67-48 70-48 70-51 72-51 72-52 73-52 73-54 74-54 74-55 75-55 75-56 76-56 76-58
III.	Tectonic active regions	77-127 77-170W 60-170W 60-170 50-170 50-157 45-157 45-140 42-140 42-100 40-100 40-90 35-90 35-70 30-70 30-20 50-20 50-25 49-25 49-26 48-26 48-27 47-27 47-30 46-30 46-33 45-33 45-43 44-43 44-44 43-44 43-48 42-48 42-49 41-49 41-50 40-50 40-52 39-52 39-54 37-54 37-55 38-55 38-56 39-56 39-57 38-57 38-59 37-59 37-61 38-61 38-64 43-64 43-67 42-67 42-68 44-68 44-67 45-67 45-69 44-69 44-70 43-70 43-75 44-75 44-77 45-77 45-79 46-79 46-81 52-81 52-82 54-82 54-83 56-83 56-85 57-85 57-86 56-86 56-89 57-89 57-92 59-92 59-94 55-94 55-99 54-99 54-101 53-101 53-102 52-102 52-105 53-105 53-107 54-107 54-108 56-108 56-109 57-109 57-111 58-111 58-113 59-113 59-117 58-117 58-121 57-121 57-123 56-123 56-125 55-125 55-128 56-128 56-131 57-131 57-133 58-133 58-134 59-134 59-136 63-136 63-130 64-130 64-127 65-127 65-125 67-125 67-124 68-124 68-125 69-125 69-127

Table 27. Parameters of the Generalized Travel-Time Curves (Depth = 0 km).

Basic Equation: $T\text{-}R/V_{red} = (A \pm \sigma_A) - (B \pm \sigma_B) \times R$

Phase	Range, km	V_{red}, km/sec	A	σ_A	B	σ_B	N	r	SD, sec
I. Platform areas									
Pn	220-1190	8.0	8.18	0.36	0.0049	0.0004	103	0.75	1.0
	1191-2200	8.0	12.49	0.49	0.0085	0.0003	262	0.88	1.3
Sn	220-2200	4.62	14.54	0.73	0.0043	0.0005	246	0.50	3.6
Pg	220-1400	6.0	-0.44	0.73	0.0047	0.0010	109	0.42	2.1
Lg	200-2500	3.5	-1.69	0.59	0.0020	0.0005	462	0.20	5.3
II. Paleozoic massifs and young plates									
Pn	200-2200	8.0	8.95	0.17	0.0047	0.0002	153	0.93	0.9
Sn	350-1400	4.62	14.40	0.70	0.0016	0.0007	100	0.24	2.7
Pg	220-1400	6.0	-0.44	0.73	0.0047	0.0010	109	0.42	2.1
Lg	200-2500	3.5	-1.69	0.59	0.0020	0.0005	462	0.20	5.3
III. Tectonic active regions									
Pn	200-1800	8.0	8.54	0.17	0.0024	0.0002	342	0.62	1.2
Sn	200-2000	4.62	13.18	0.57	-0.0018	0.0005	165	0.25	3.0
Pg	200-1400	6.0	-0.44	0.52	0.0026	0.0007	98	0.37	1.6
Lg	200-2500	3.5	-1.69	0.59	0.0020	0.0005	462	0.20	5.3

Note: **T** - travel time, sec; **R** - epicentral distance, km; $\mathbf{V_{red}}$ - reduction velocity, km/sec; **N** - data set; r - correlation coefficient; **SD** - residual standard deviation, sec.

Table 28. Modeling Errors for Generalized Geotectonic Provinces of Northern Eurasia.

Distance, deg.	I. Platform areas				II. Paleozoic massifs and young plates				III. Tectonic active regions			
	Modeling Error, sec				Modeling Error, sec				Modeling Error, sec			
	Pn	Pg	Sn	Lg	Pn	Pg	Sn	Lg	Pn	Pg	Sn	Lg
2	0.6	1.4	0.4	3.4	0.5	1.4	2.6	3.4	0.9	1.2	2.7	3.4
3	0.6	1.2	0.3	3.2	0.5	1.2	2.1	3.2	1.0	1.4	2.9	3.2
4	0.8	1.8	2.3	3.3	0.8	1.8	2.0	3.3	0.9	1.3	2.4	3.3
5	0.8	2.2	2.1	3.7	0.8	2.2	2.0	3.7	0.9	1.3	2.0	3.7
6	0.8	2.4	1.9	3.8	0.8	2.4	2.2	3.8	1.2	1.3	2.3	3.8
7	1.0	2.7	2.8	3.9	0.9	2.7	2.7	3.9	1.2	1.6	2.7	3.9
8	1.5	2.2	2.9	4.1	0.9	2.2	2.9	4.1	1.2	2.0	3.6	4.1
9	1.2	2.1	3.3	5.6	1.0	2.1	3.1	5.6	1.4	2.0	3.8	5.6
10	1.2	3.0	3.4	5.3	1.0	3.0	1.7	5.3	1.3	2.0	3.4	5.3
11	1.3	2.8	3.3	5.1	1.0	2.8	2.8	5.1	1.3	1.9	4.2	5.1
12	1.3		3.8	6.7	0.9		4.1	6.7	1.2		4.4	6.7
13	1.3		3.7	6.3	1.2		3.4	6.3	1.3		3.2	6.3
14	1.3		3.4	6.4	1.1		3.2	6.4	1.4		3.1	6.4
15	1.4		4.2	6.4	0.9		3.5	6.4	1.2		3.1	6.4
16	1.3		4.5	6.4	1.0		3.4	6.4	1.5		4.4	6.4
17	1.4		3.9	6.3	0.9		3.5	6.3	1.5		3.1	6.3
18	1.3		3.4	5.7	0.9		3.3	5.7	1.5		2.3	5.7
19	1.3		3.5	5.3				5.3				5.3
20	1.1			6.2				6.2				6.2

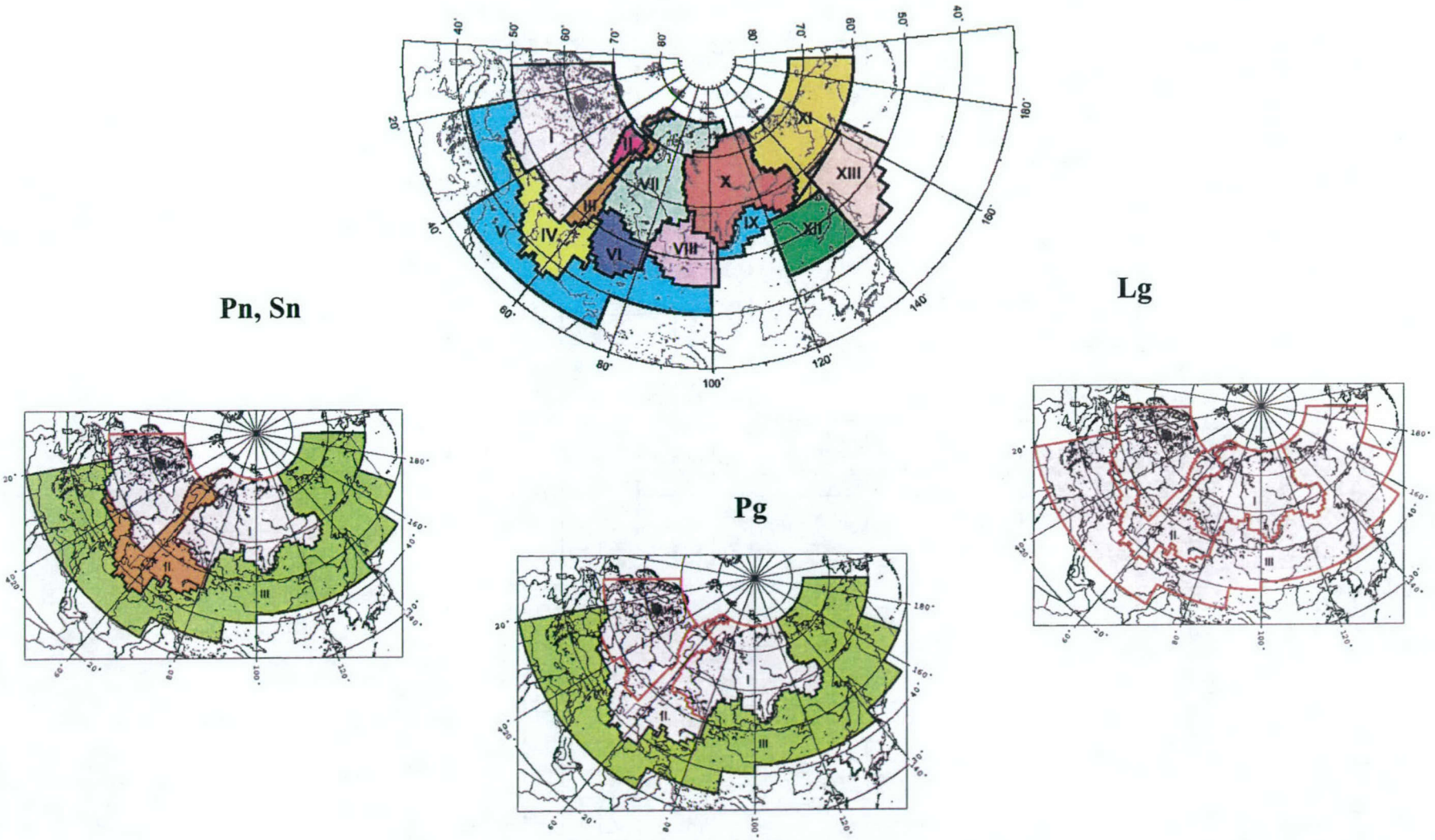


Figure 14. Generalized Regionalization of Northern Eurasia.

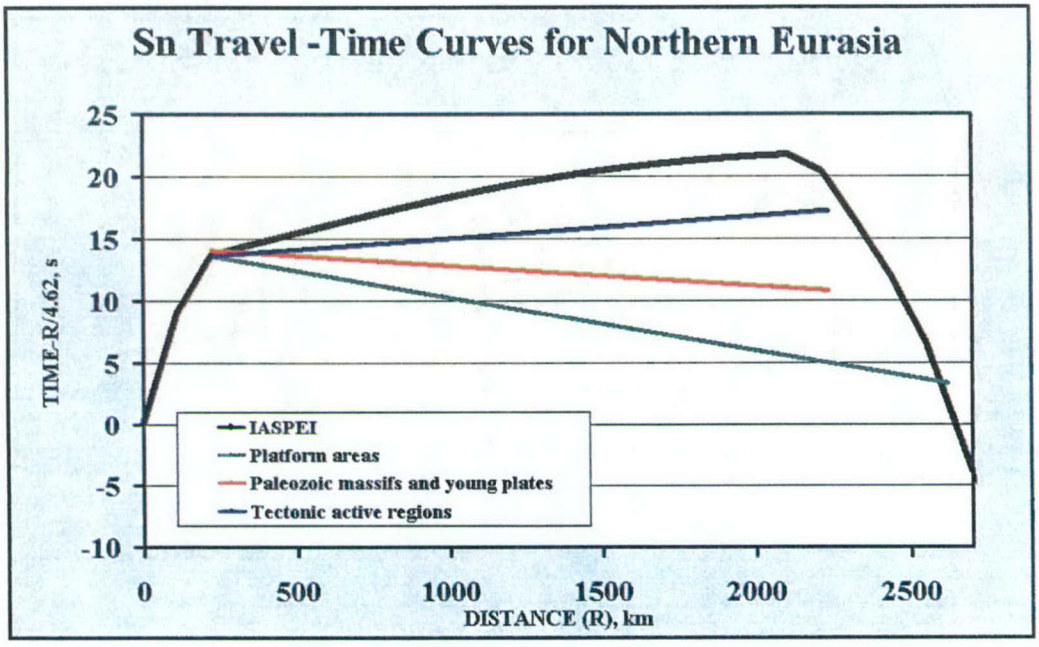


Figure 15. Pn Travel-Time Curves for Northern Eurasia.

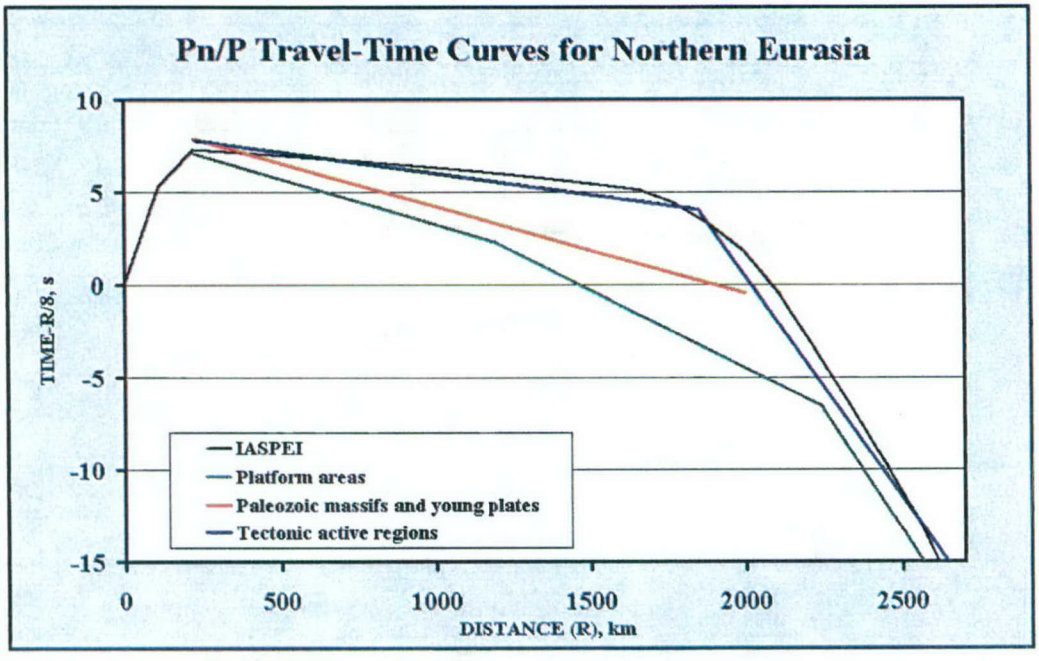


Figure 16. Sn Travel-Time Curves for Northern Eurasia.

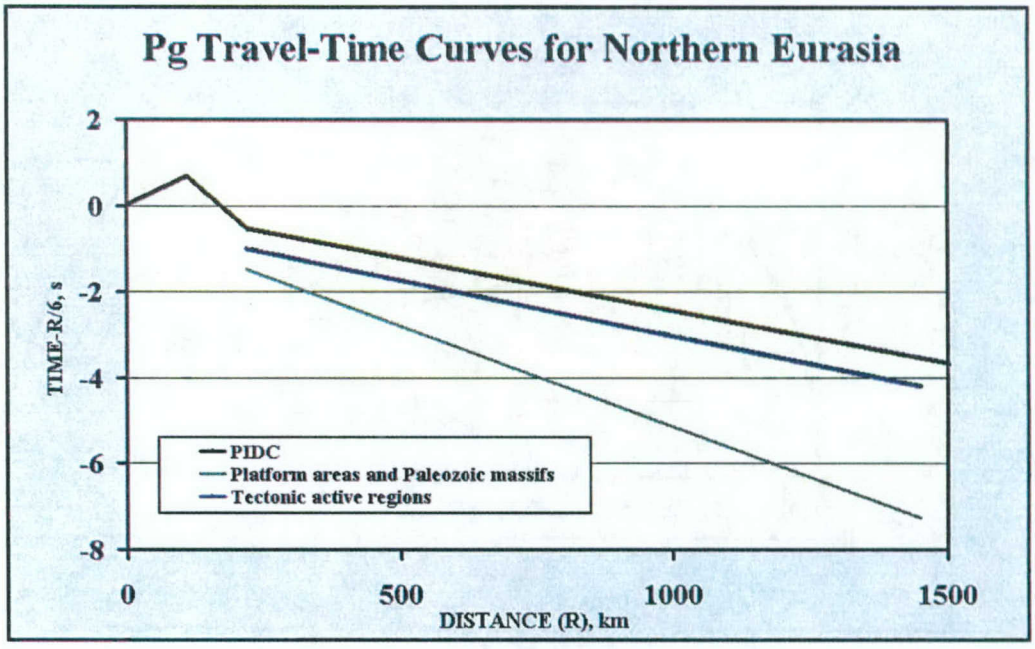


Figure 17. Pg Travel-Time Curves for Northern Eurasia.

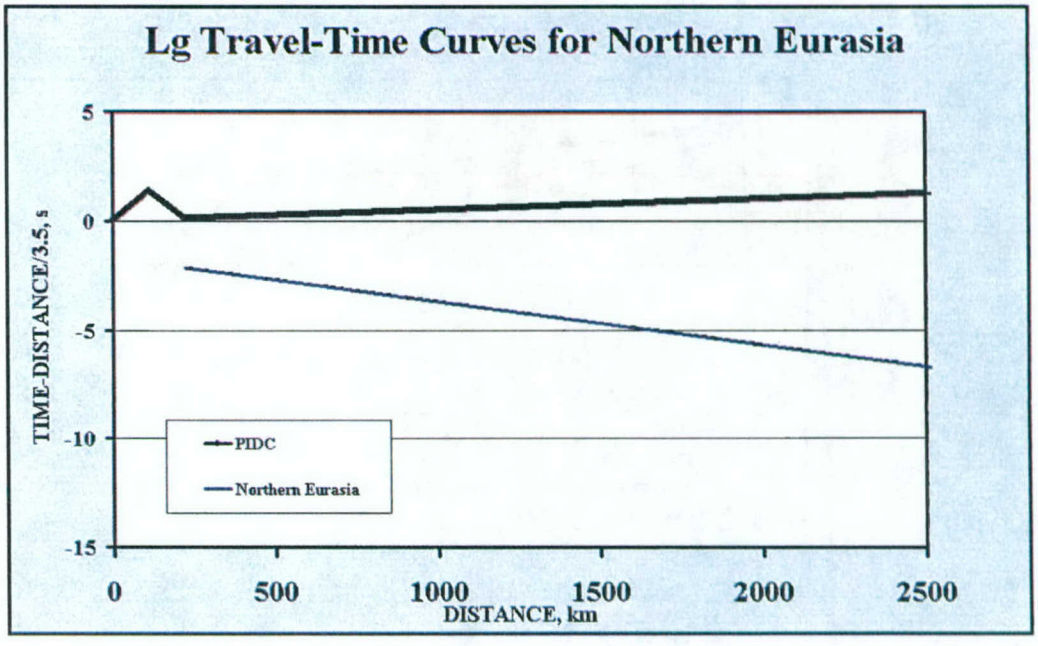


Figure 18. Lg Travel-Time Curves for Northern Eurasia.

SECTION 4
CALCULATIONS OF SSSCS FOR SEISMIC STATIONS OF THE RUSSIAN ACADEMY OF SCIENCES INCLUDED TO THE IMS

Based on the generalized regionalization of Northern Eurasia (Table 26) and 1-D travel-time tables developed and corresponding modeling errors (Tables 27 and 28), SSSCs to the IASPEI-91 travel-time tables and corresponding modeling errors were calculated for the stations of the RAS included in the IMS auxiliary network: OBN, ARU, KIVO, TLY, TIXI, YAK, MA2 and SEY. The 1° x 1° network was used. Data on station locations were taken from Attachment 1 to the CTBT Protocol. SSSCs were calculated for Pn, Sn and Lg waves up to 20 degrees and for Pg waves up to 12 degrees.

The Geophysical Survey of the RAS developed a software program to calculate SSSCs and corresponding modeling errors (Gabsatarova, Starovoit, 2001). This software is based on the algorithm from the Technical Report CMR-98/46 (Yang *et. al.* 1998). The output file format for SSSCs and modeling errors correspond to that developed by Nagy (1996).

Figures 19–50 illustrate SSSCs and modeling errors for the stations of the RAS included in the IMS auxiliary network.

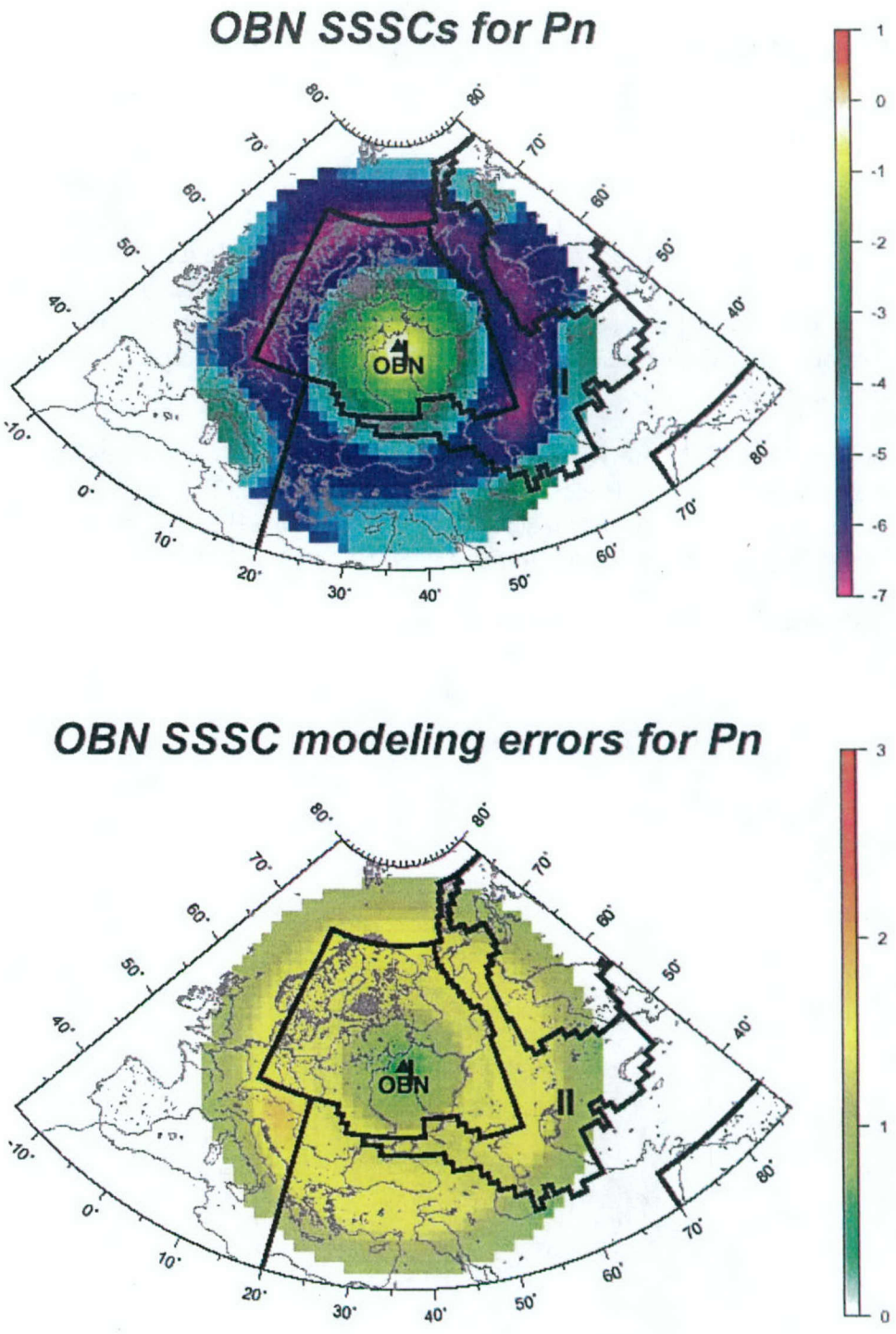


Figure 19. OBN SSSCs and Modeling Errors for Pn.

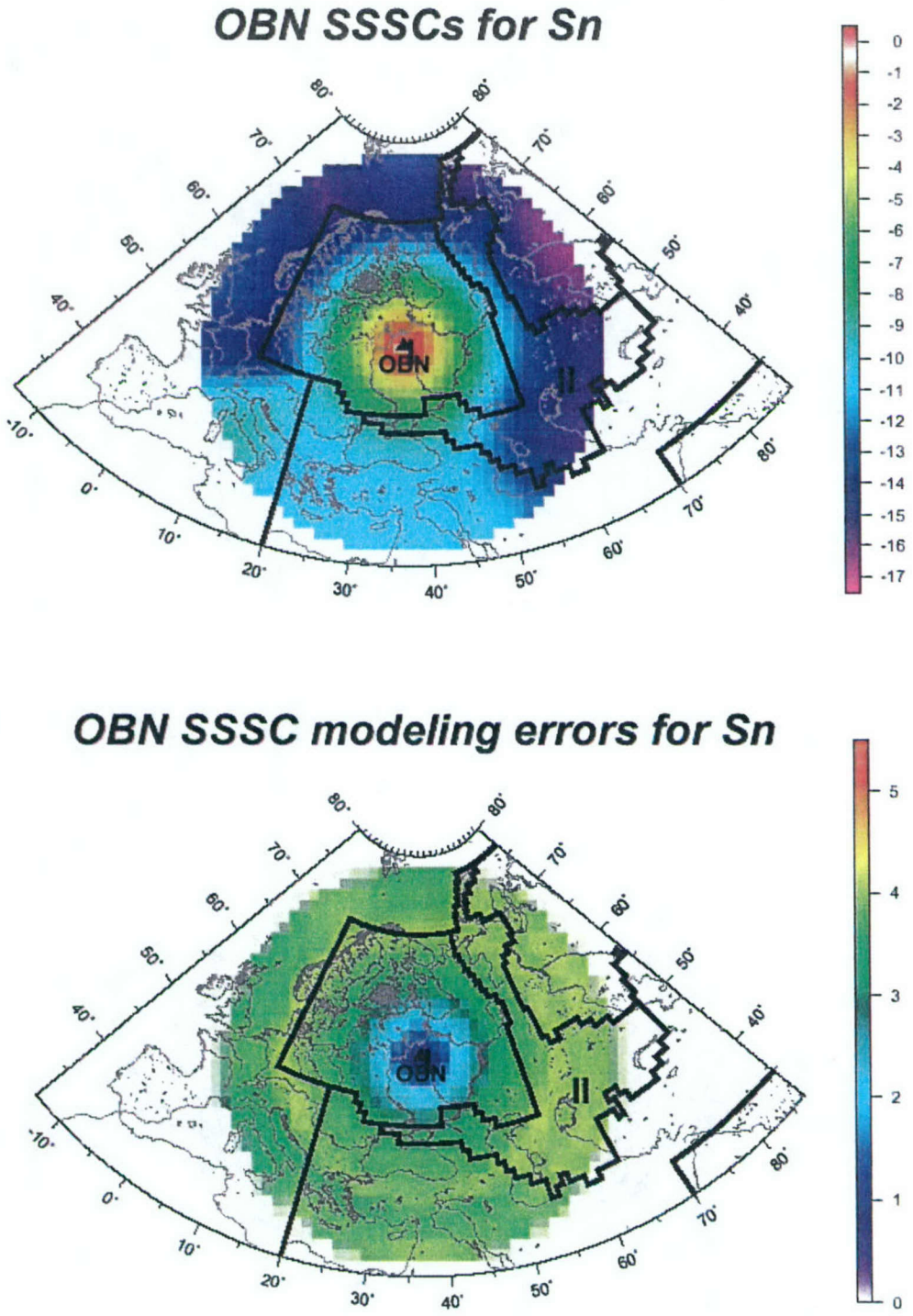


Figure 20. OBN SSSCs and Modeling Errors for Sn.

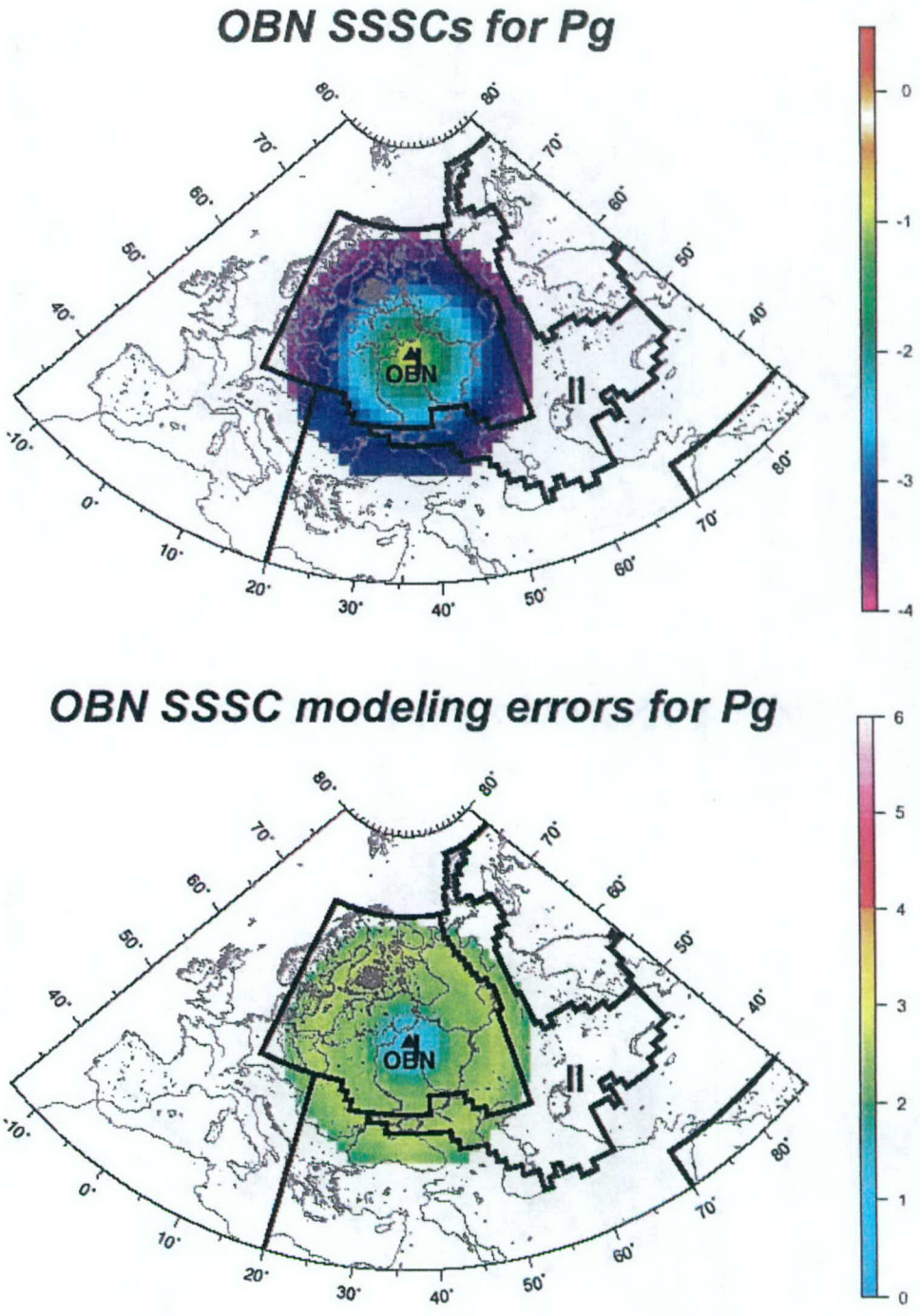


Figure 21. OBN SSSCs and Modeling Errors for Pg.

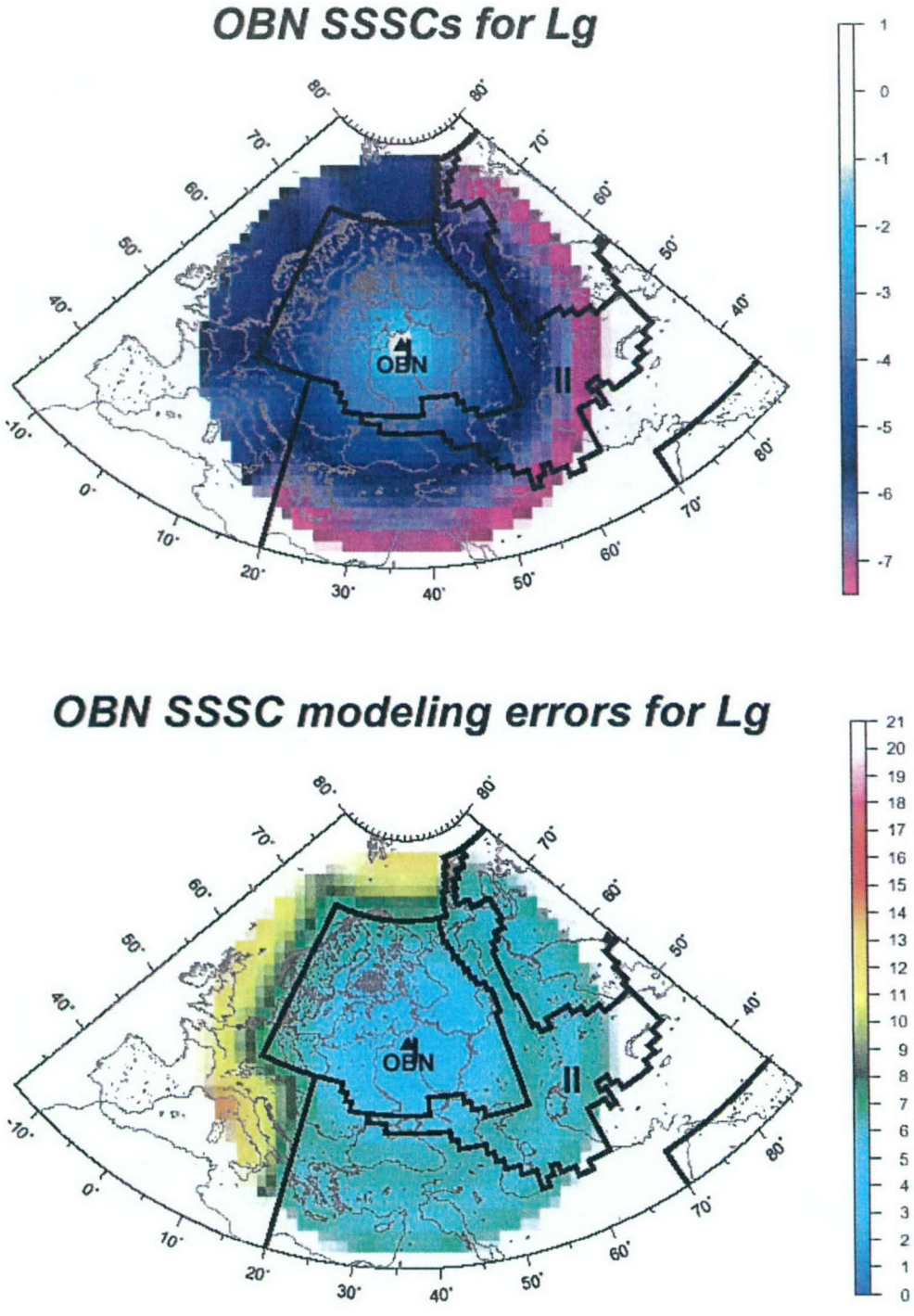


Figure 22. OBN SSSCs and Modeling Errors for Lg.

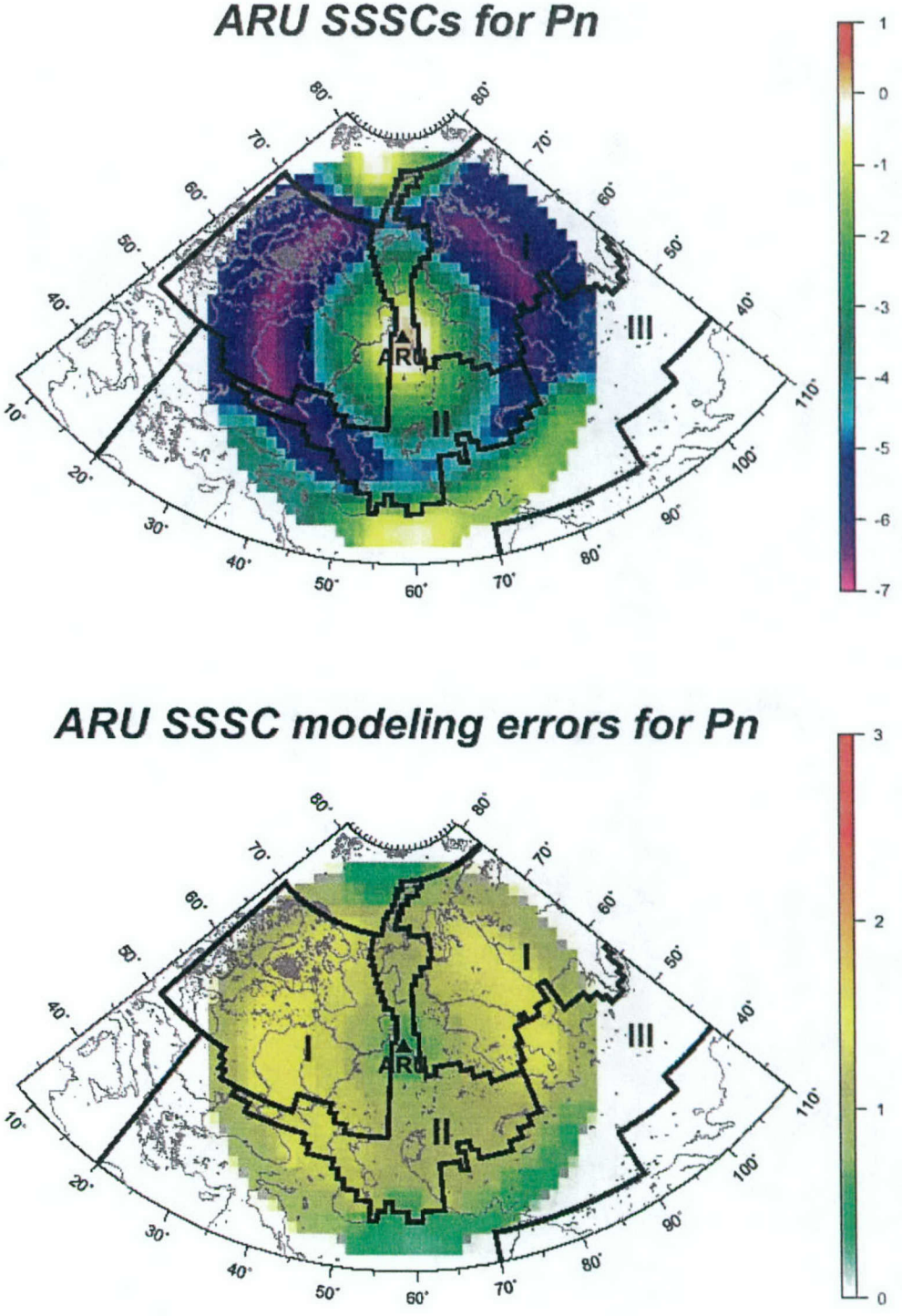


Figure 23. ARU SSSCs and Modeling Errors for Pn.

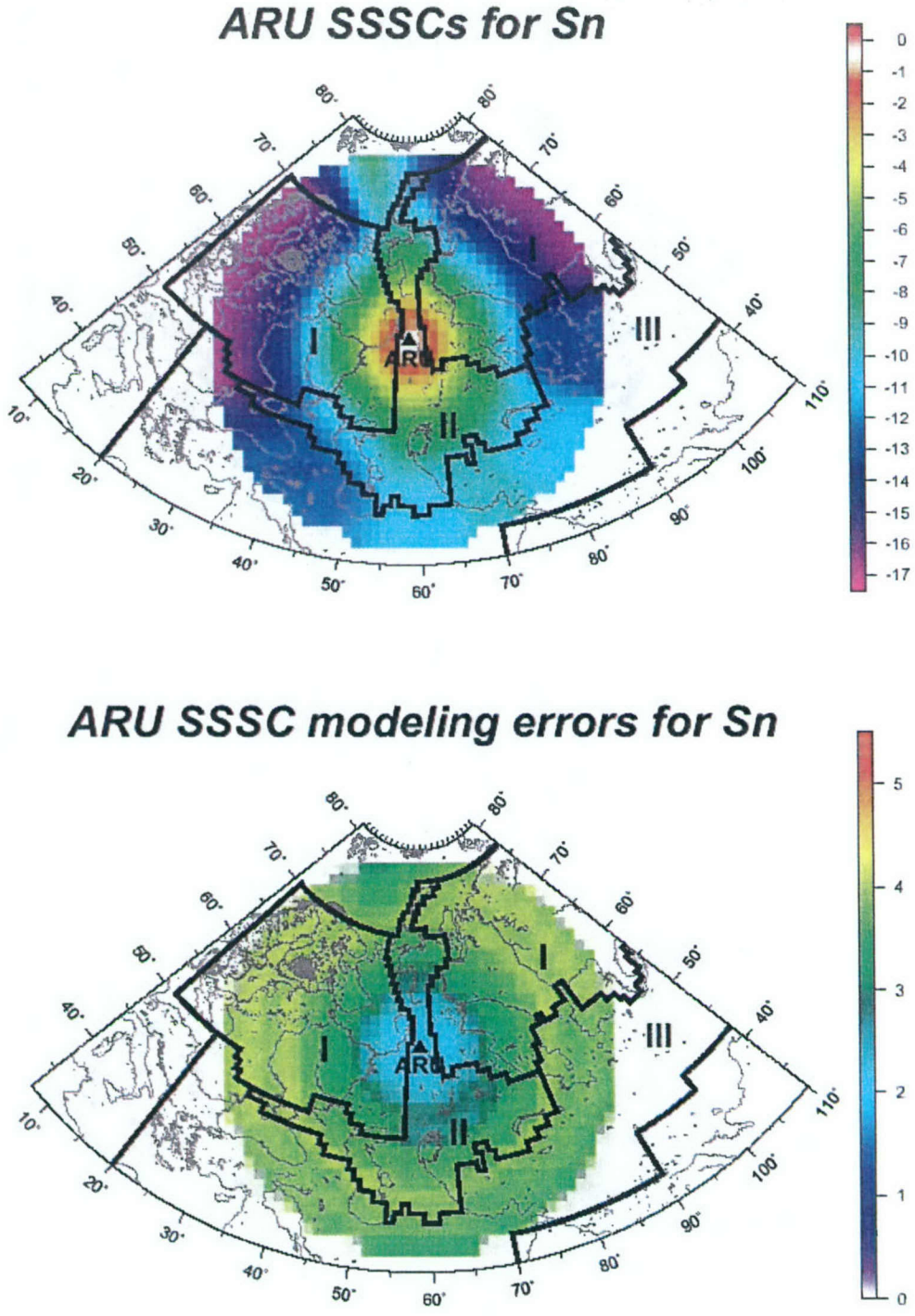


Figure 24. ARU SSSCs and Modeling Errors for Sn.

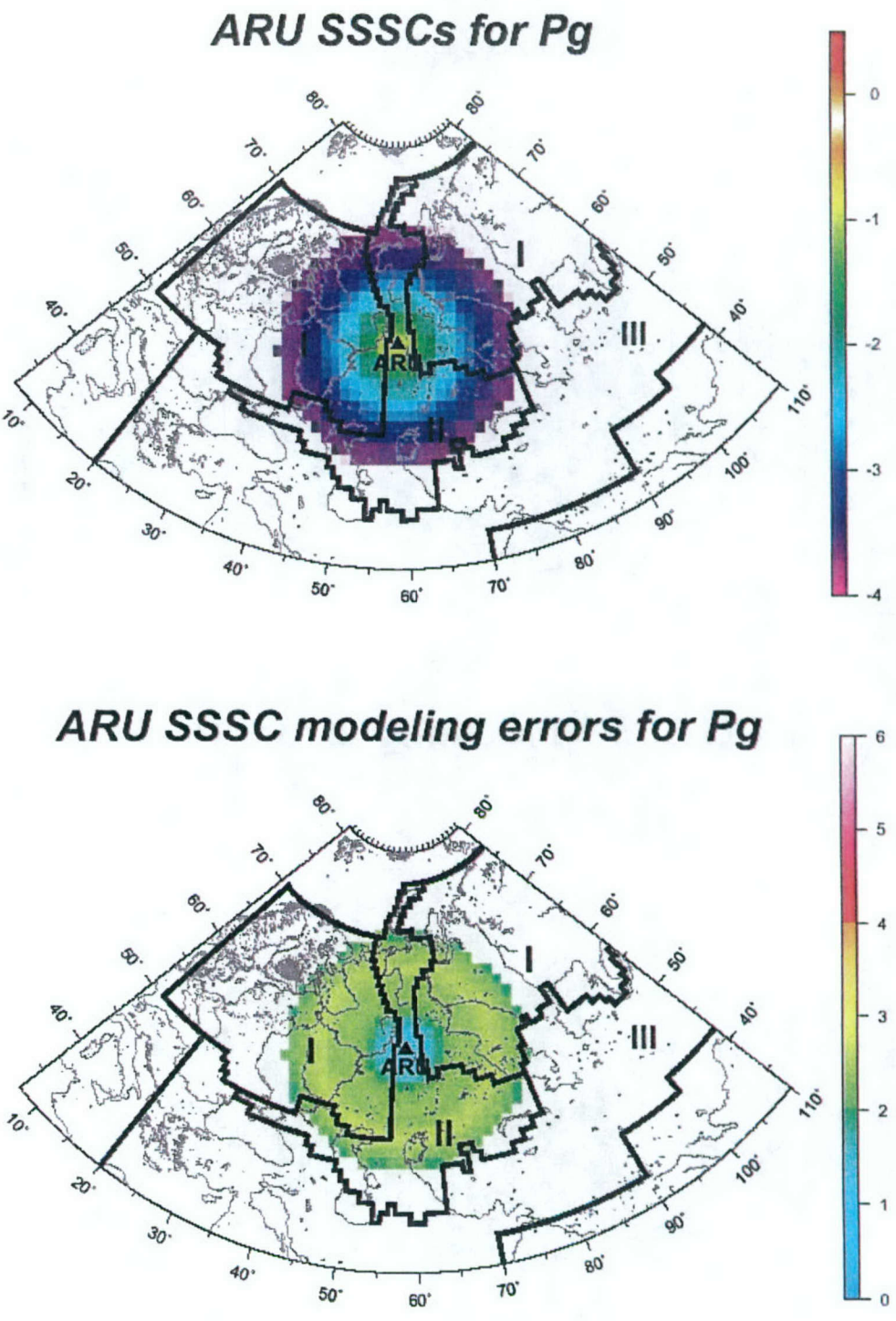


Figure 25. ARU SSSCs and Modeling Errors for Pg.

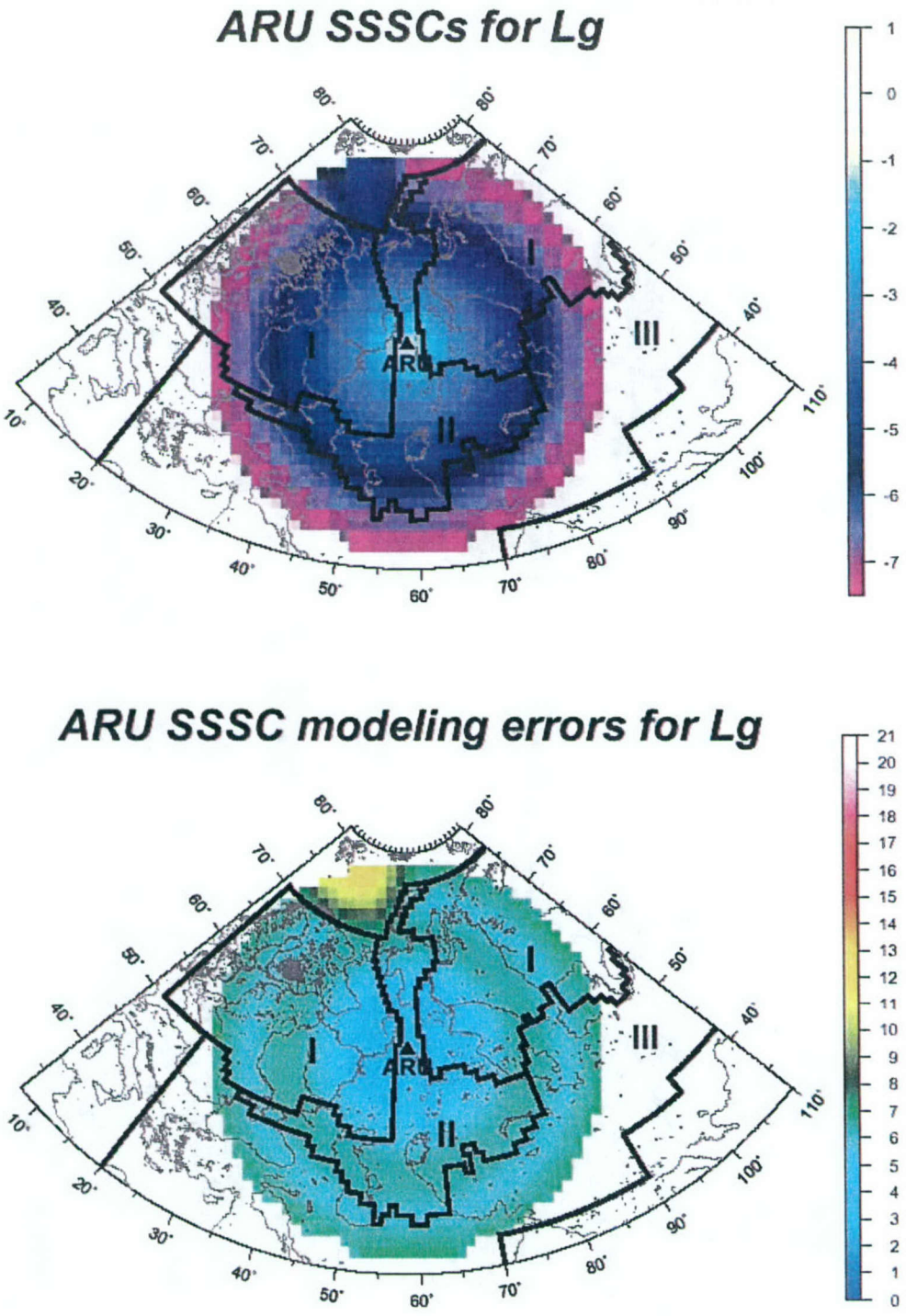


Figure 26. ARU SSSCs and Modeling Errors for Lg.

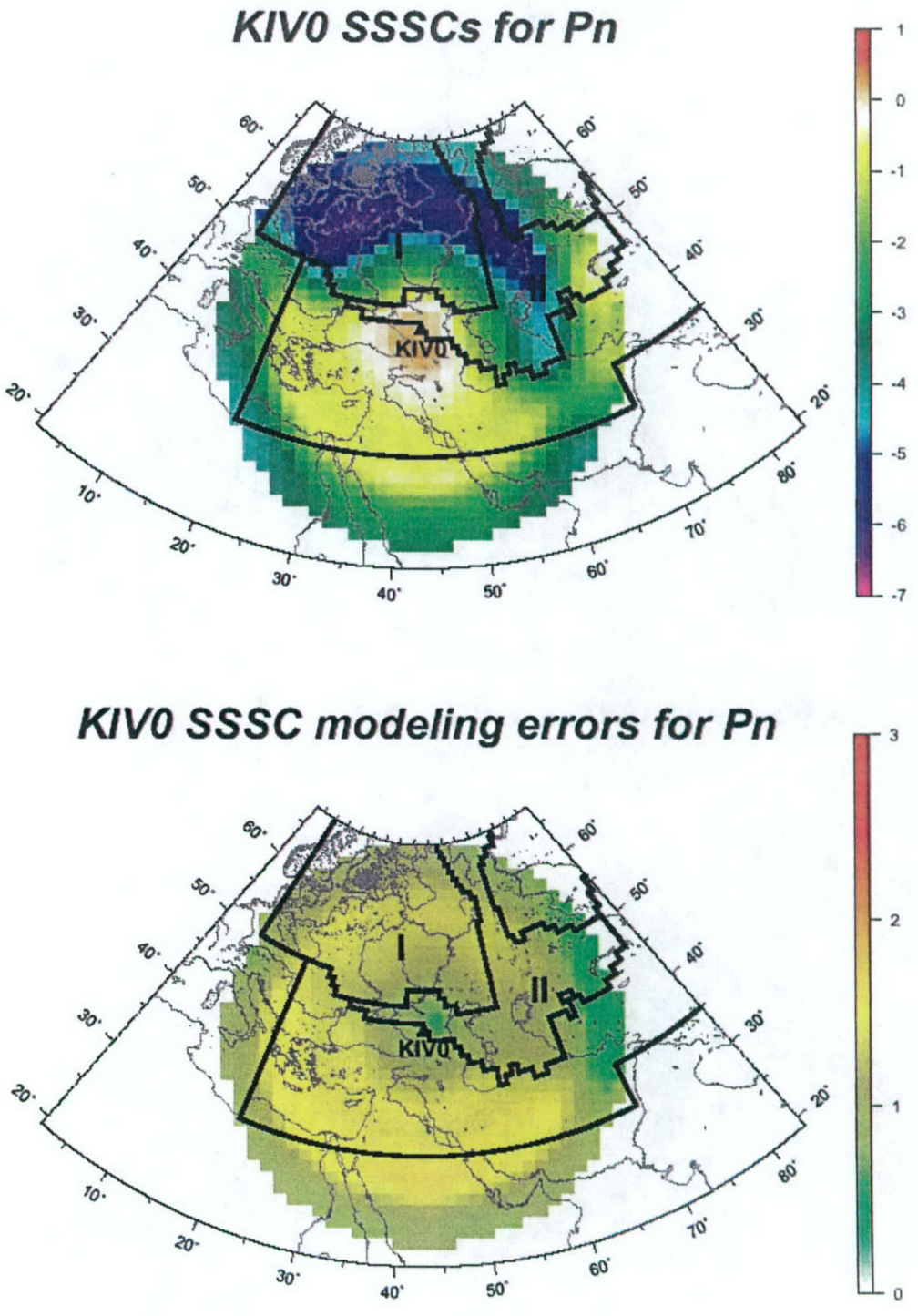


Figure 27. KIVO SSSCs and Modeling Errors for Pn.

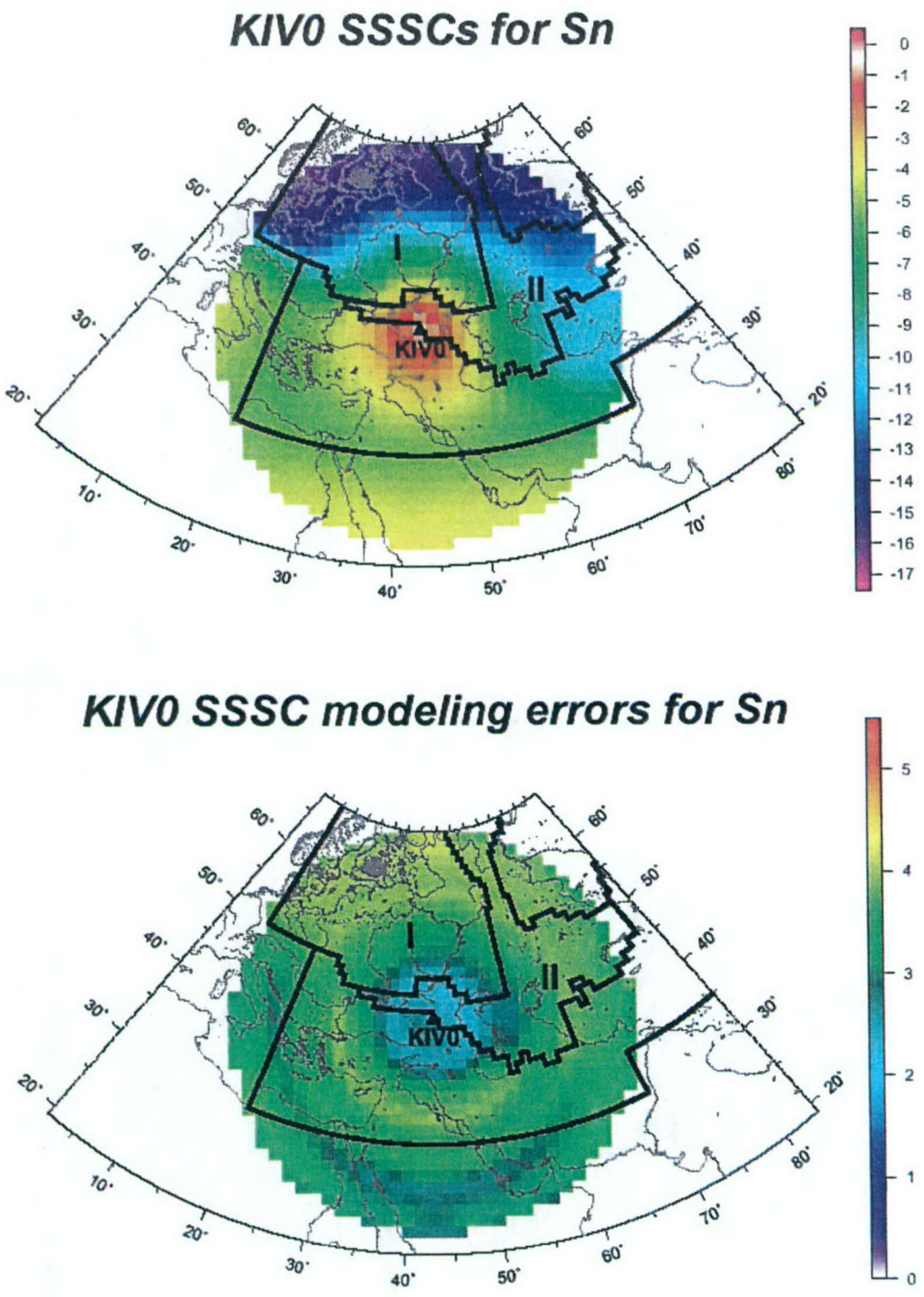
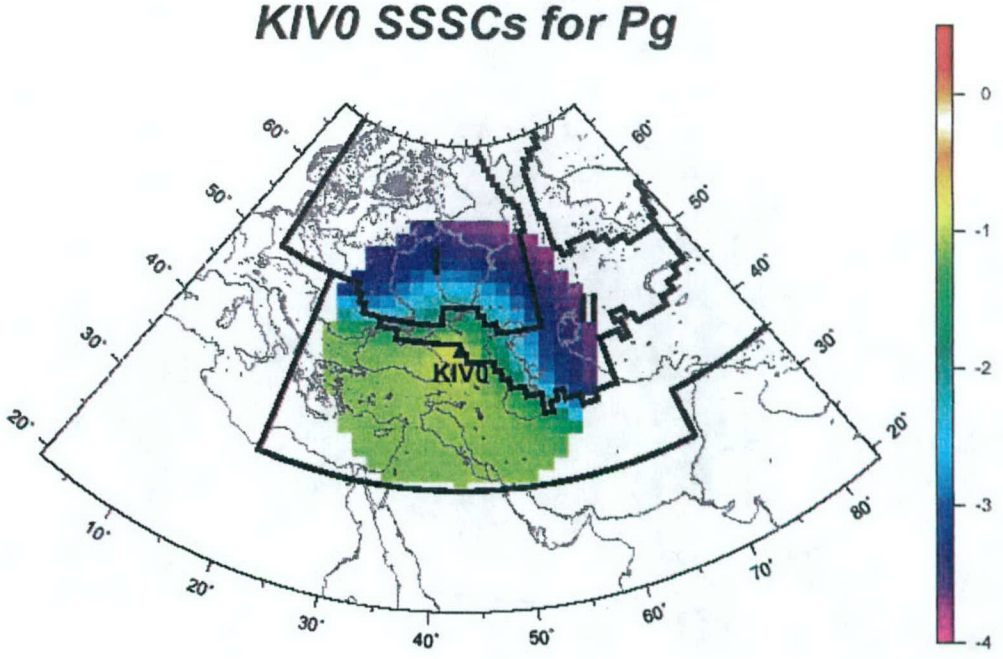


Figure 28. KIVO SSSCs and Modeling Errors for Sn.



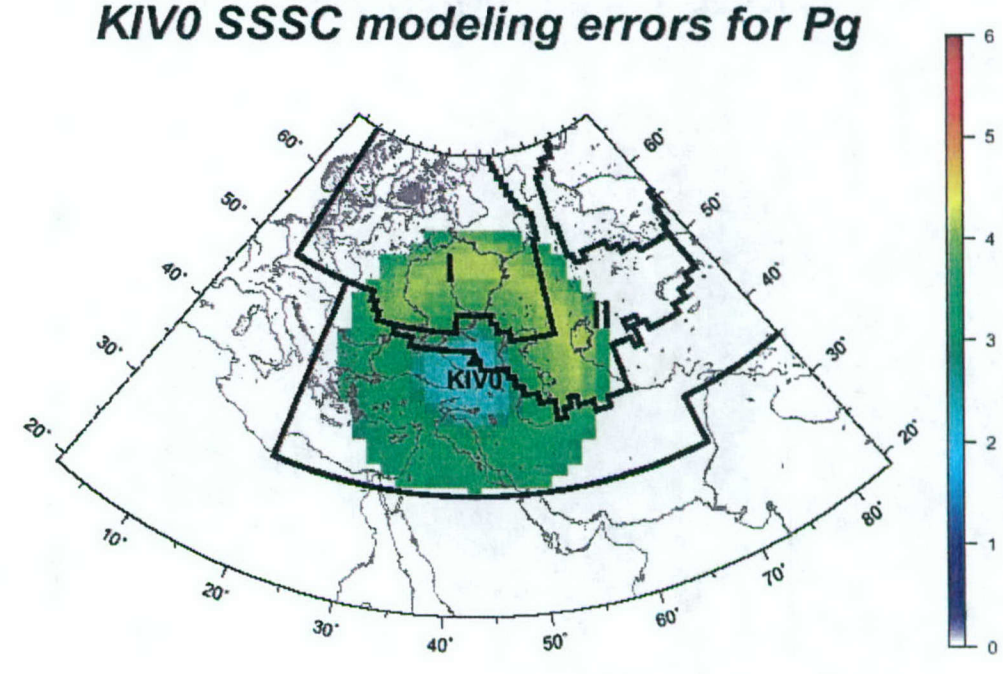
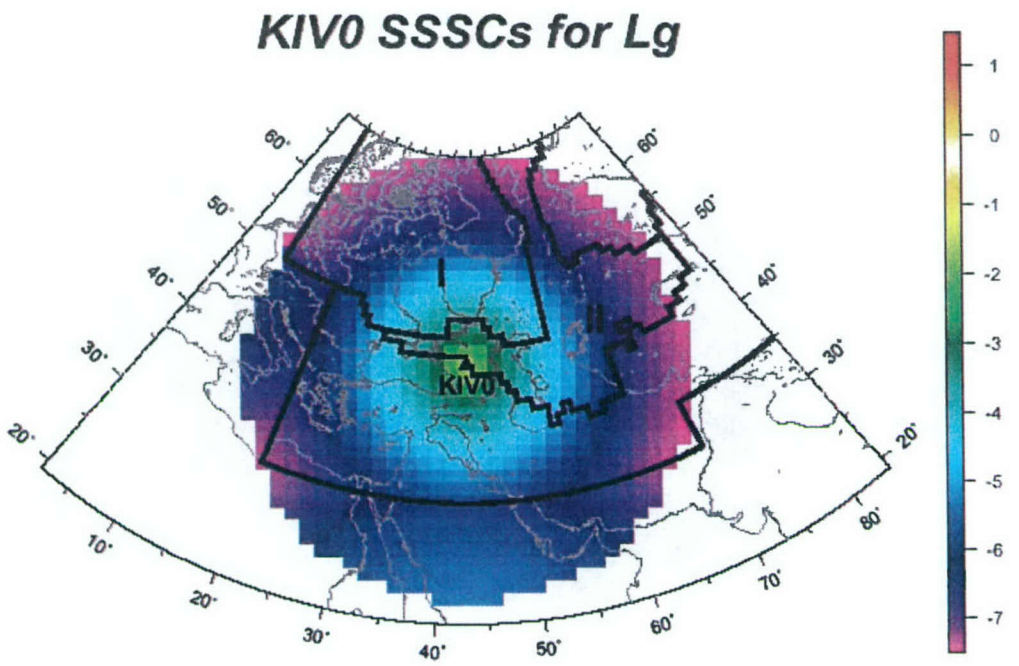


Figure 29. KIVO SSSCs and Modeling Errors for Pg.



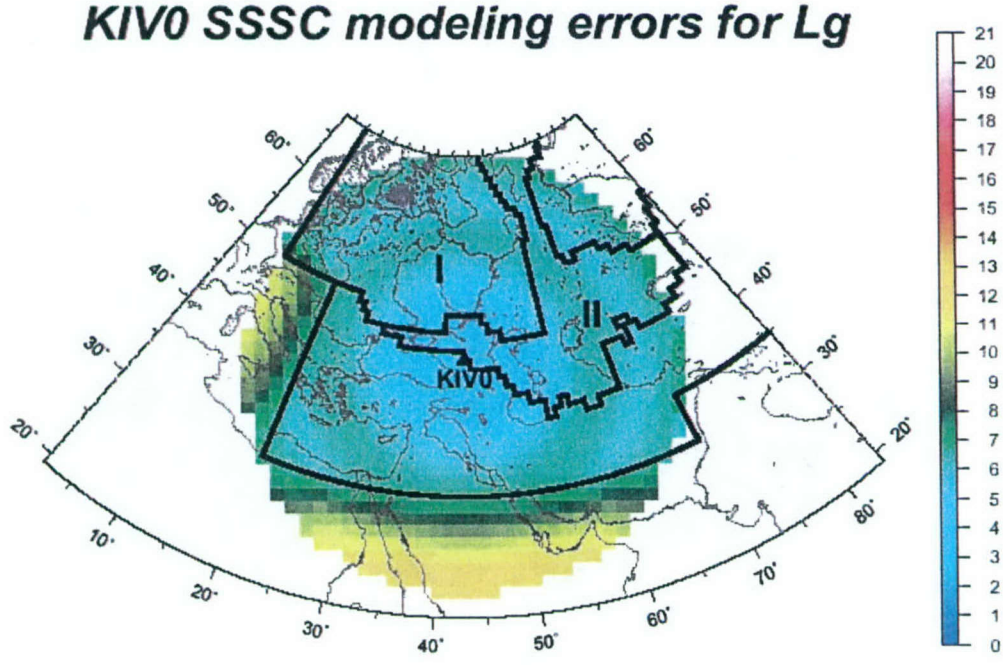


Figure 30. KIVO SSSCs and Modeling Errors for Lg.

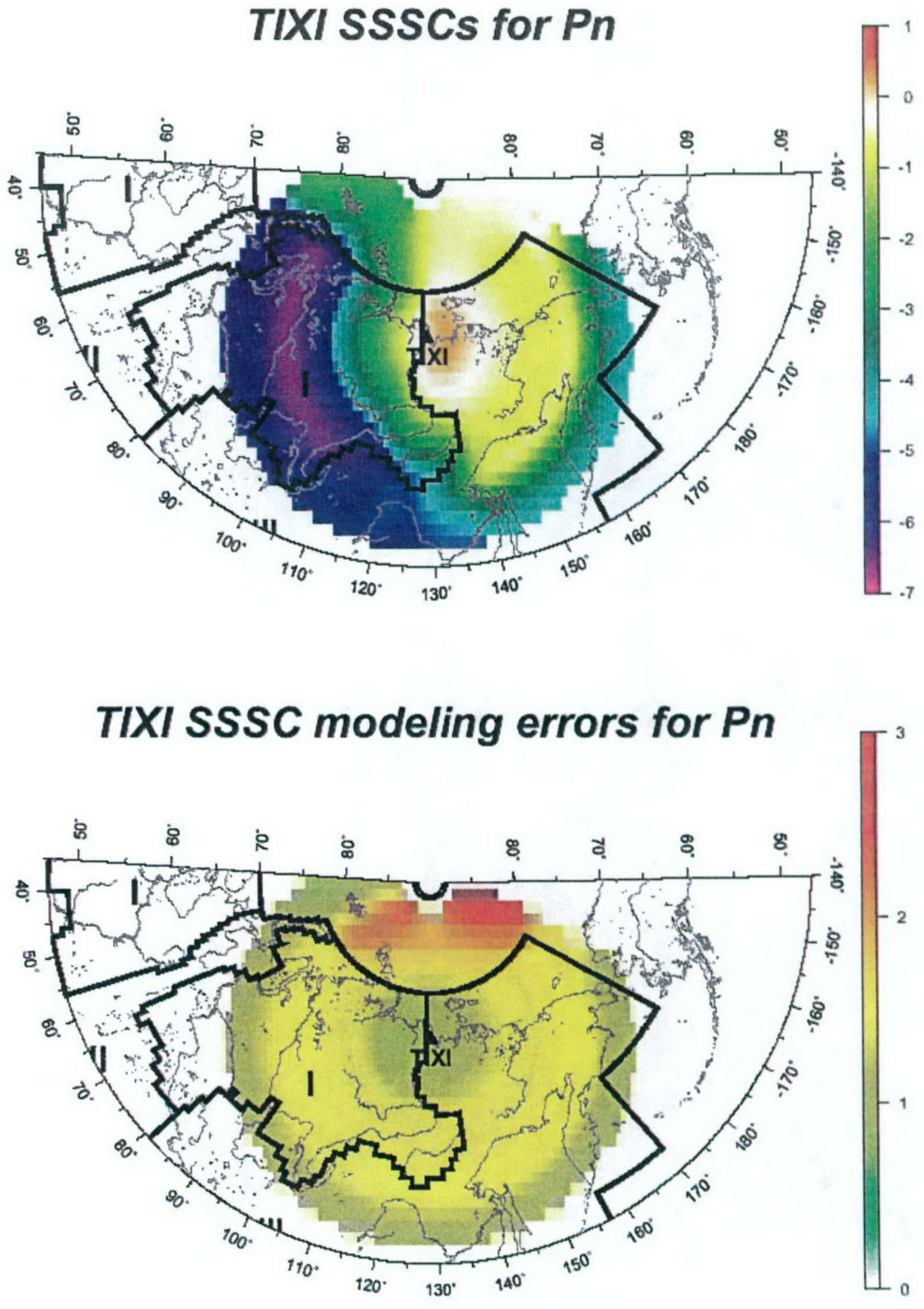


Figure 31. TIXI SSSCs and Modeling Errors for Pn.

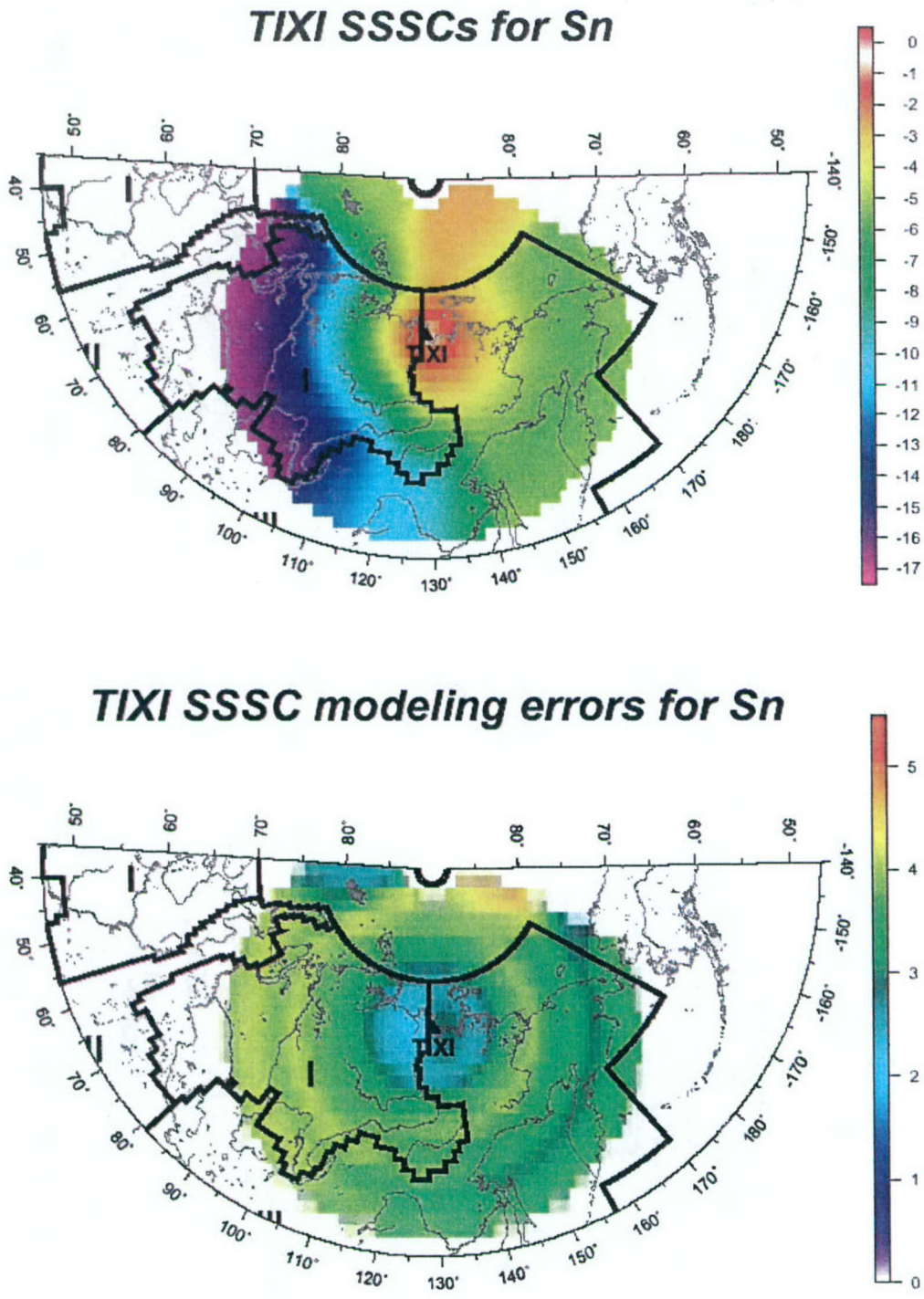


Figure 32. TIXI SSSCs and Modeling Errors for Sn.

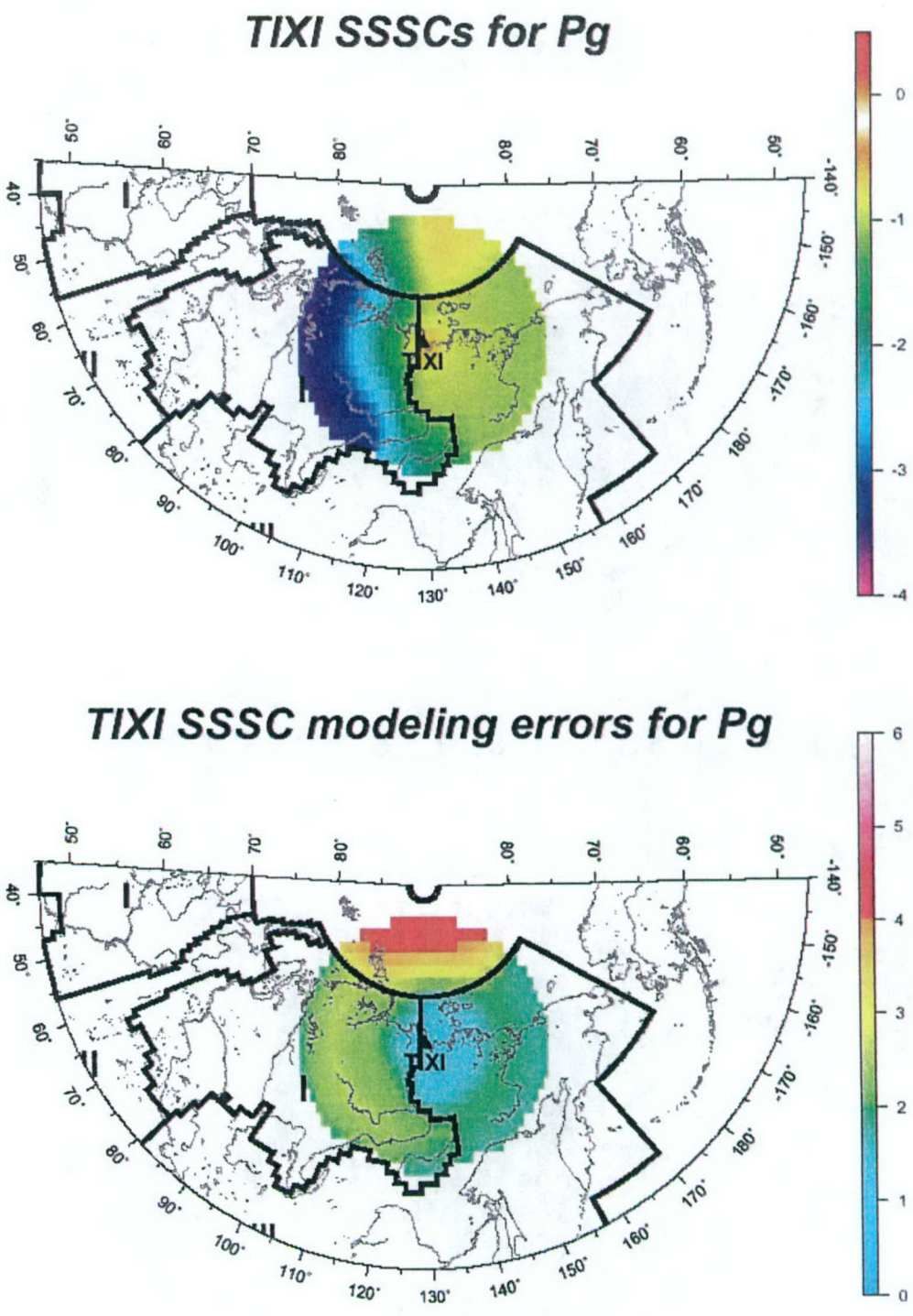


Figure 33. TIXI SSSCs and Modeling Errors for Pg.

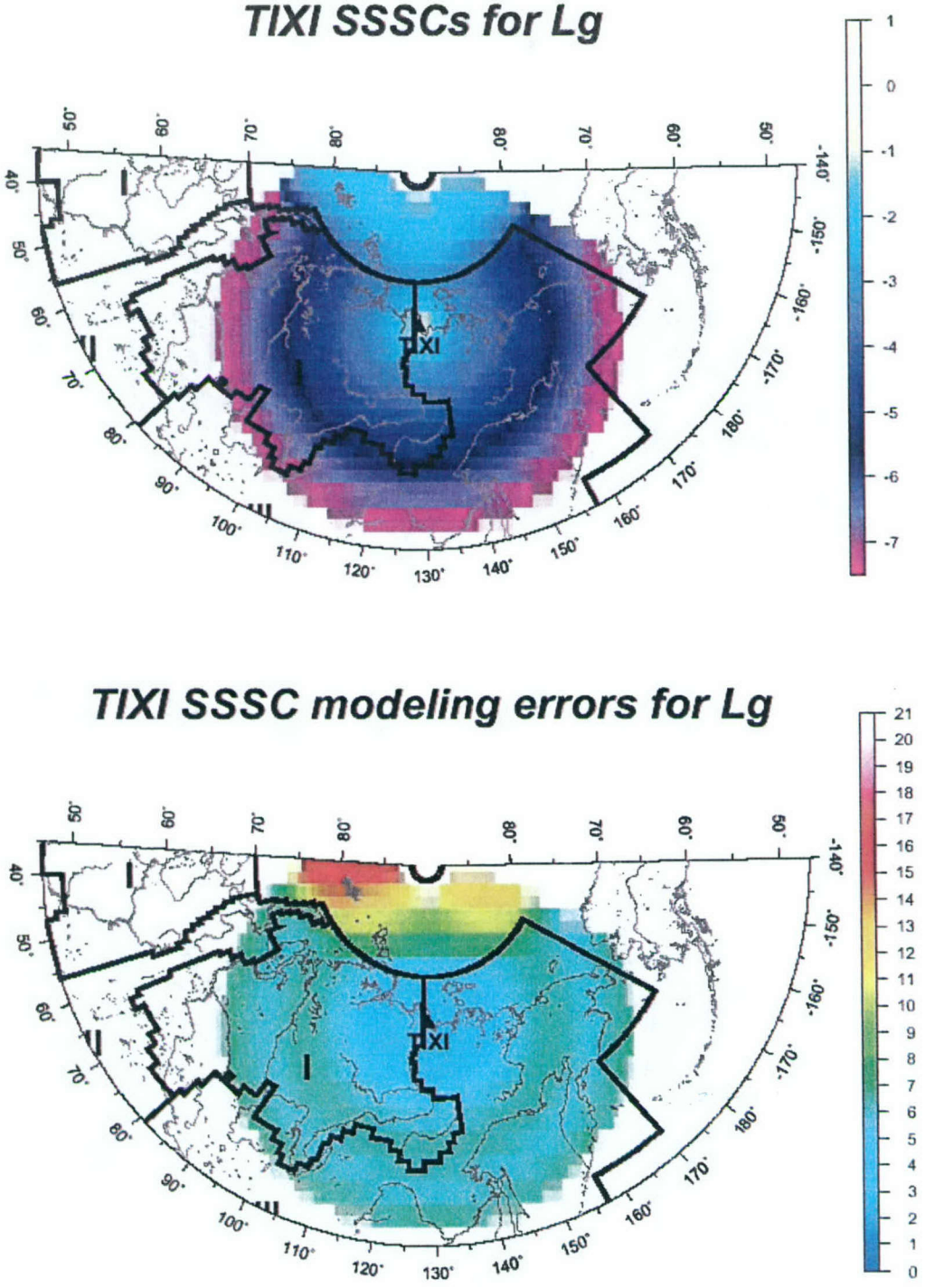


Figure 34. TIXI SSSCs and Modeling Errors for Lg.

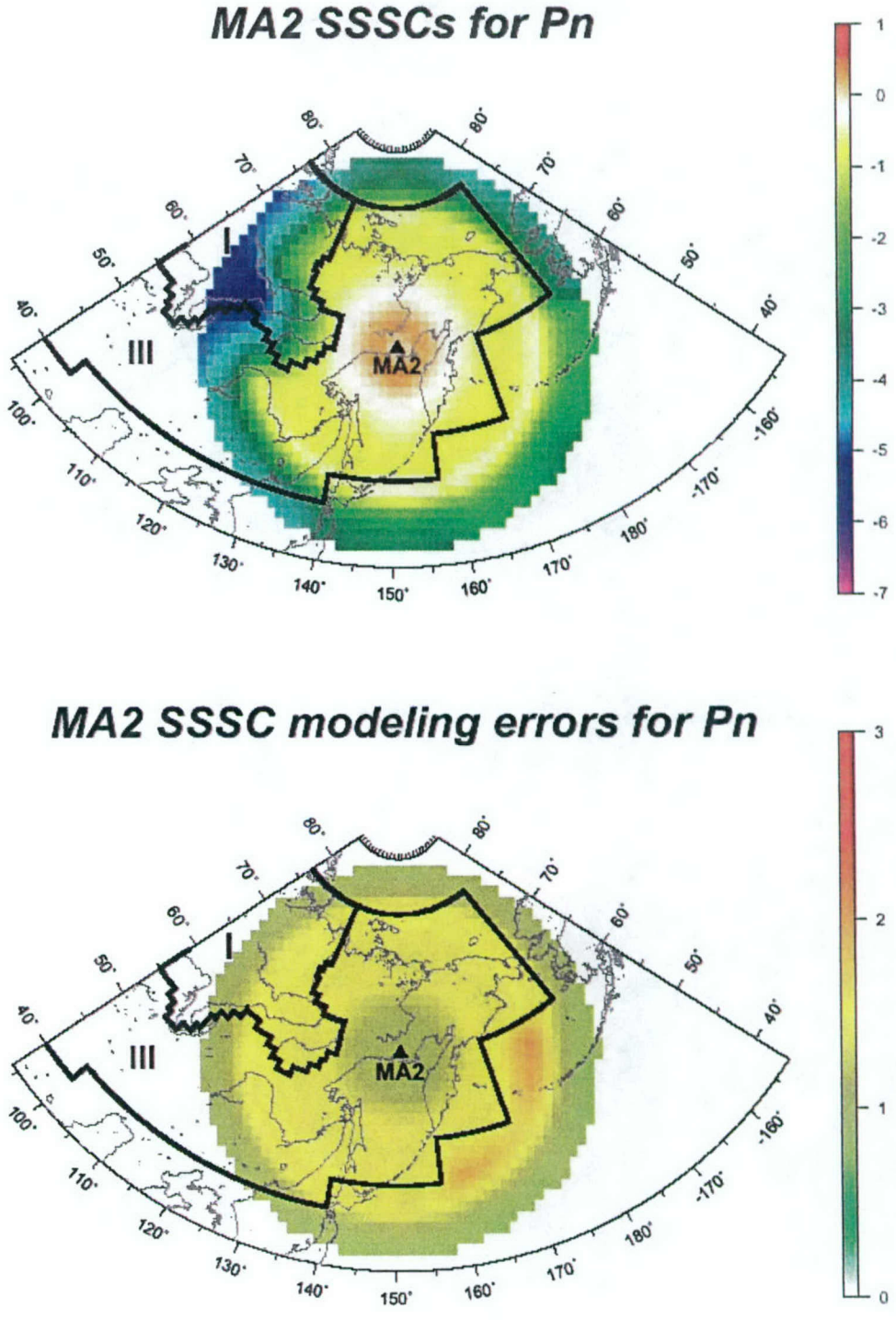


Figure 35. MA2 SSSCs and Modeling Errors for Pn.

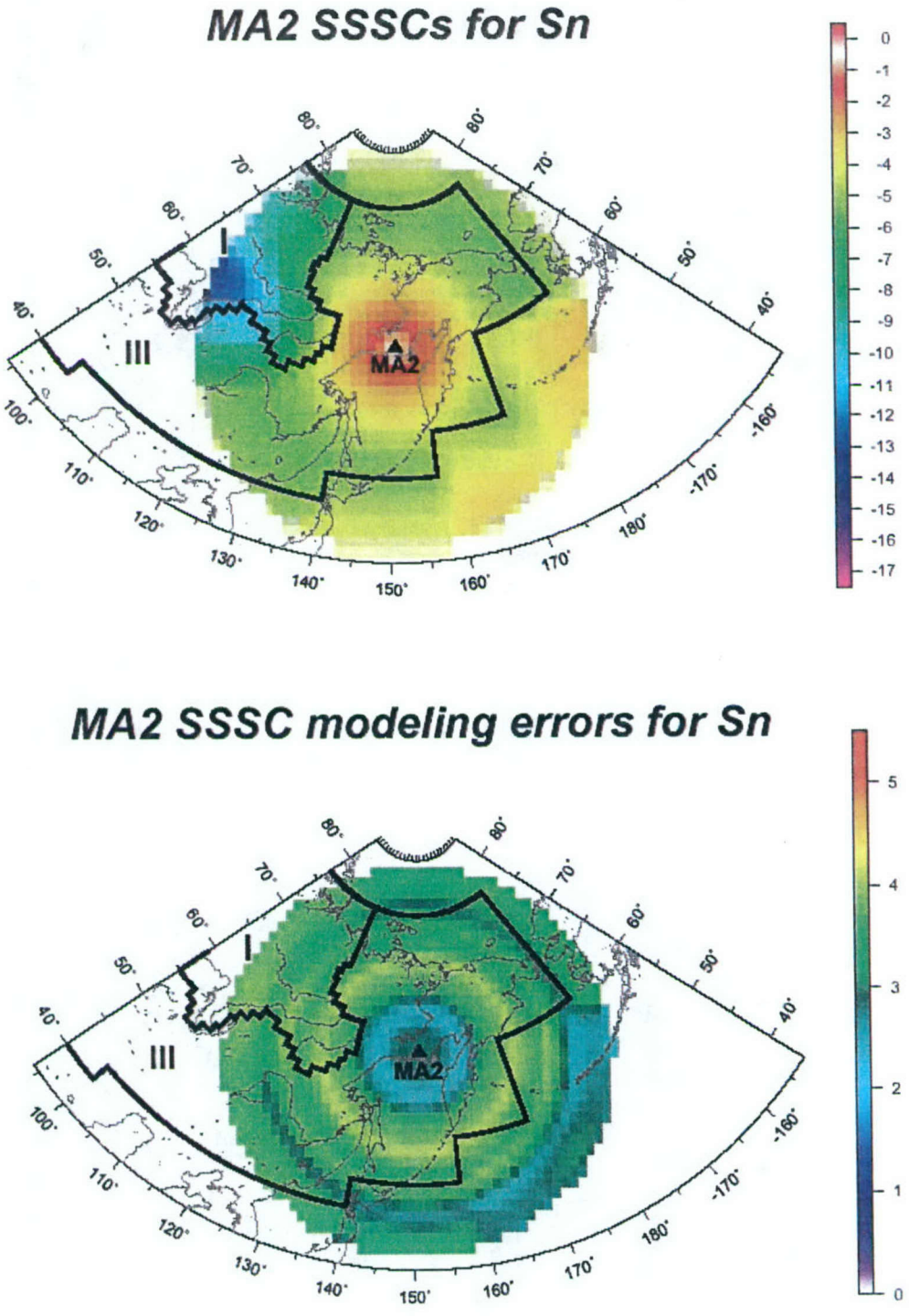
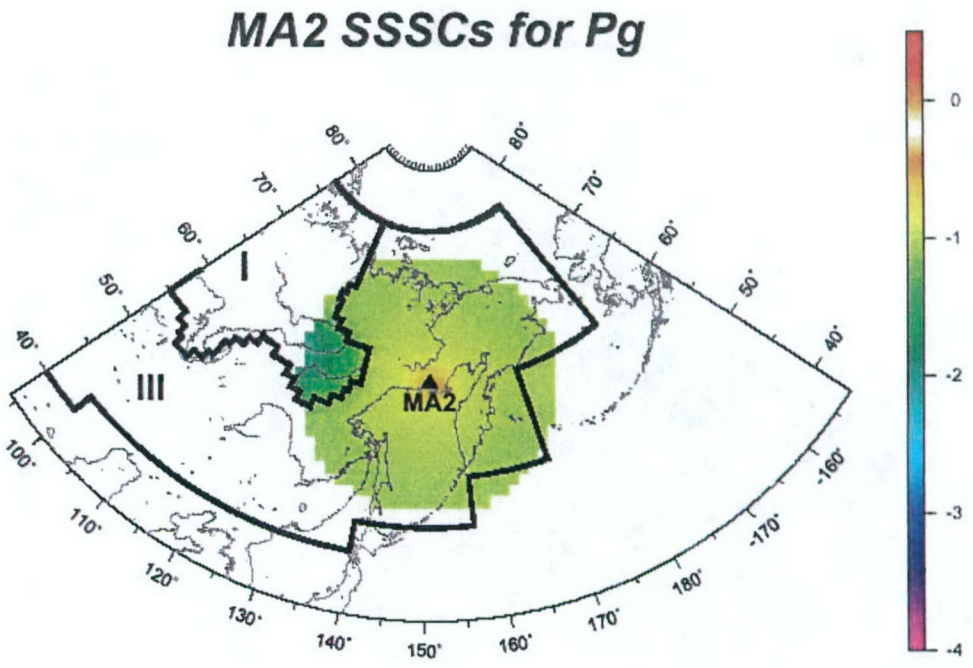


Figure 36. MA2 SSSCs and Modeling Errors for Sn.



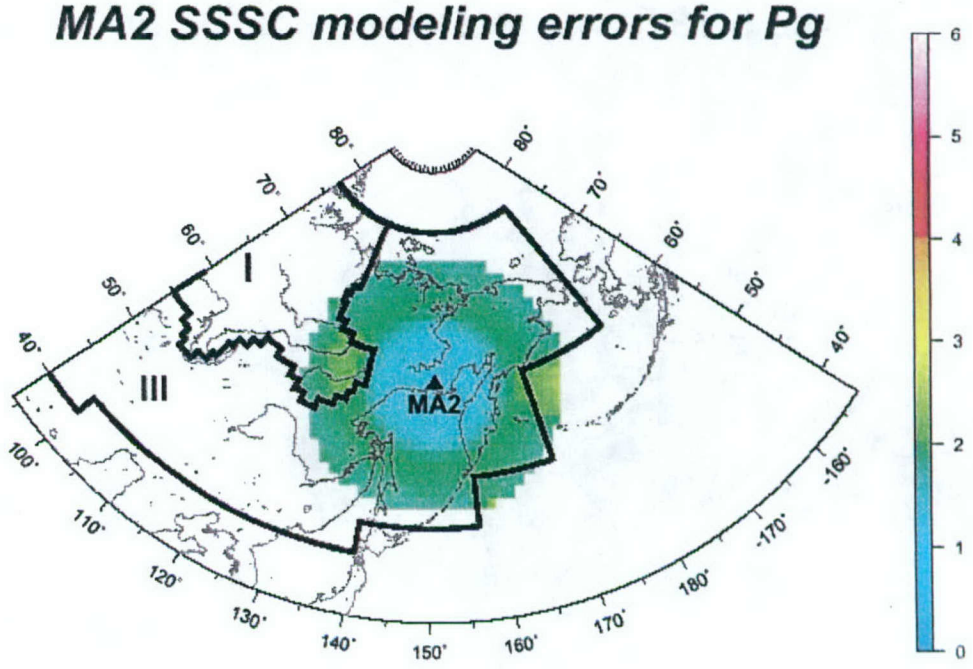


Figure 37. MA2 SSSCs and Modeling Errors for Pg.

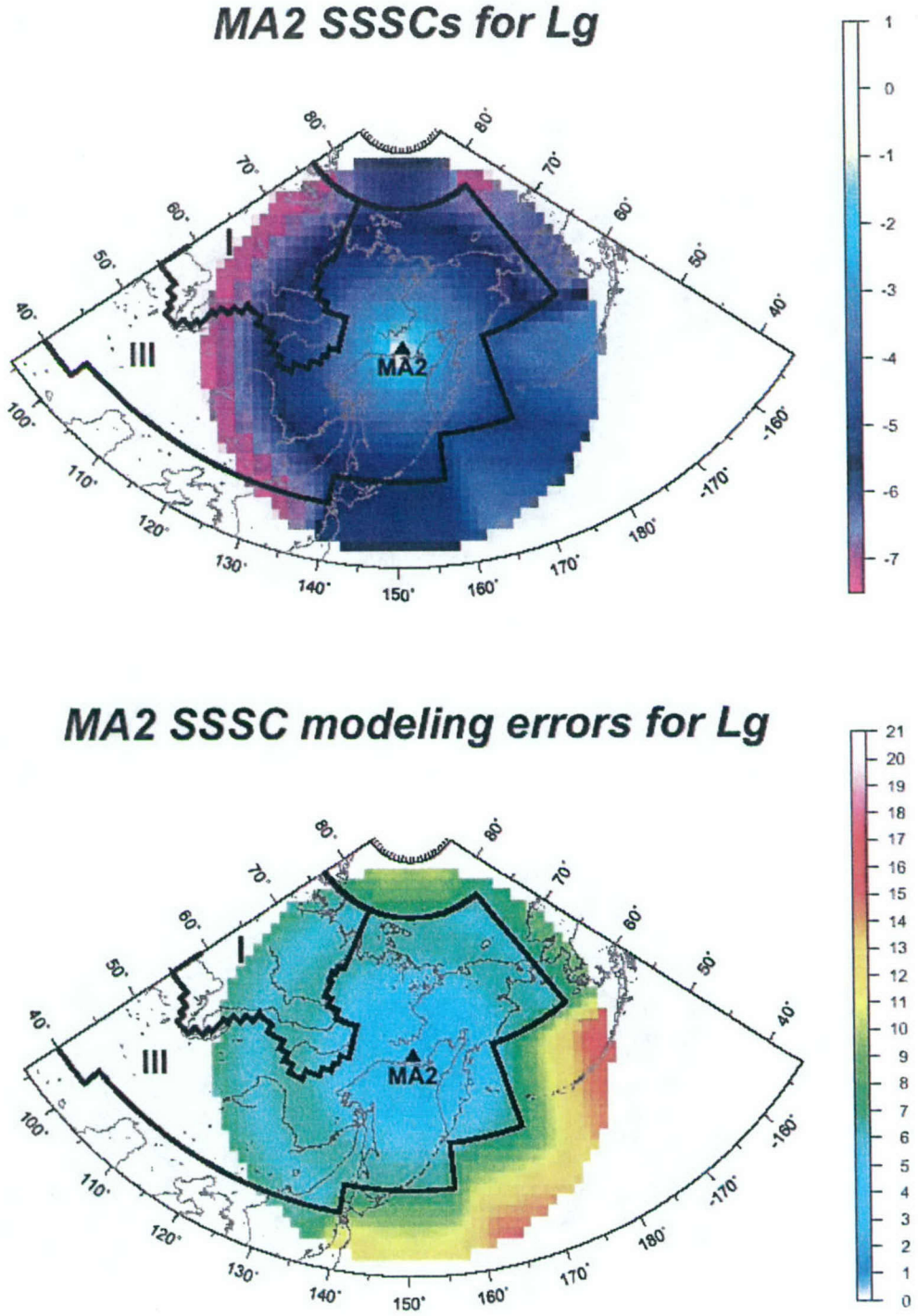


Figure 38. MA2 SSSCs and Modeling Errors for Lg.

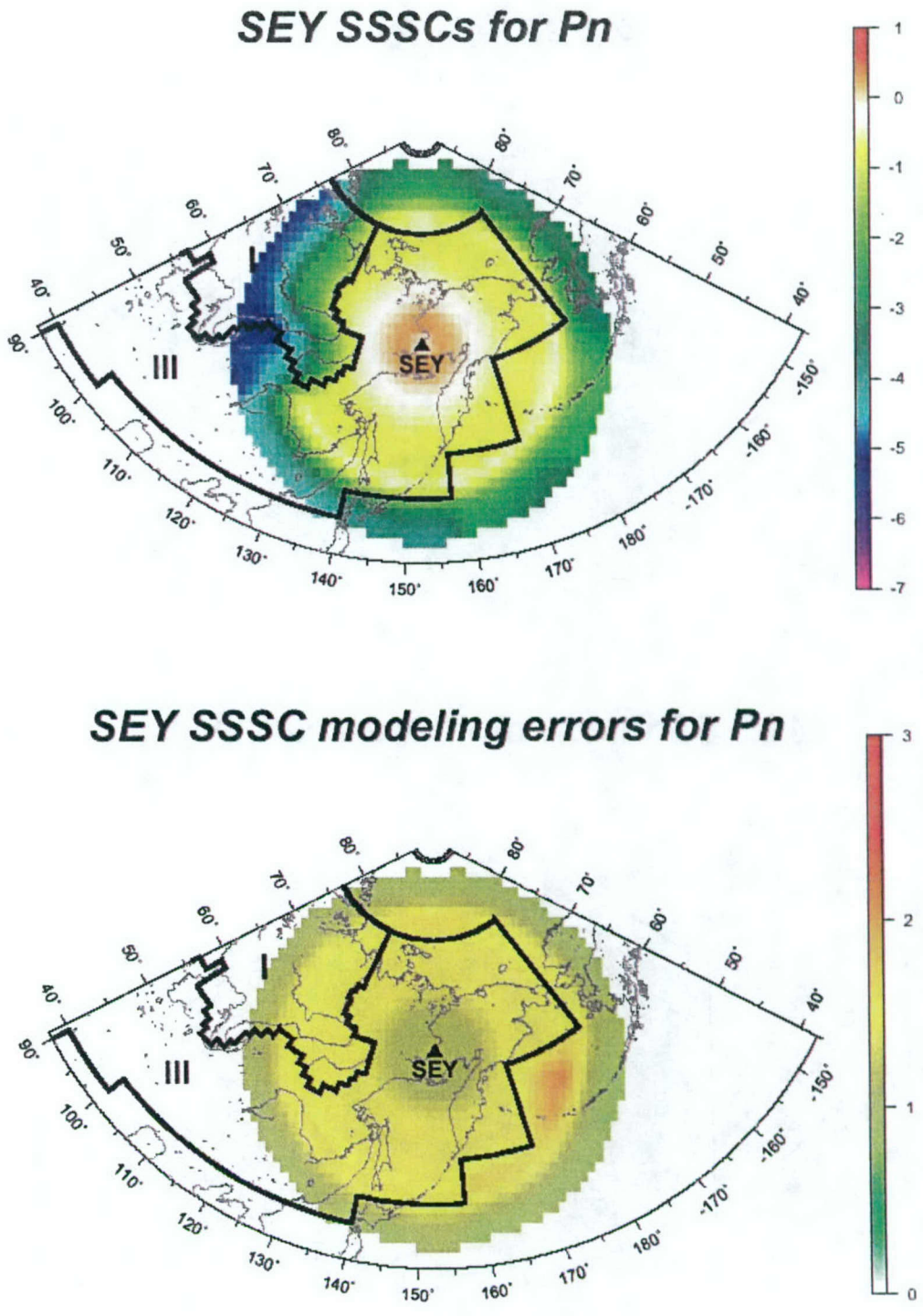


Figure 39. SEY SSSCs and Modeling Errors for Pn.

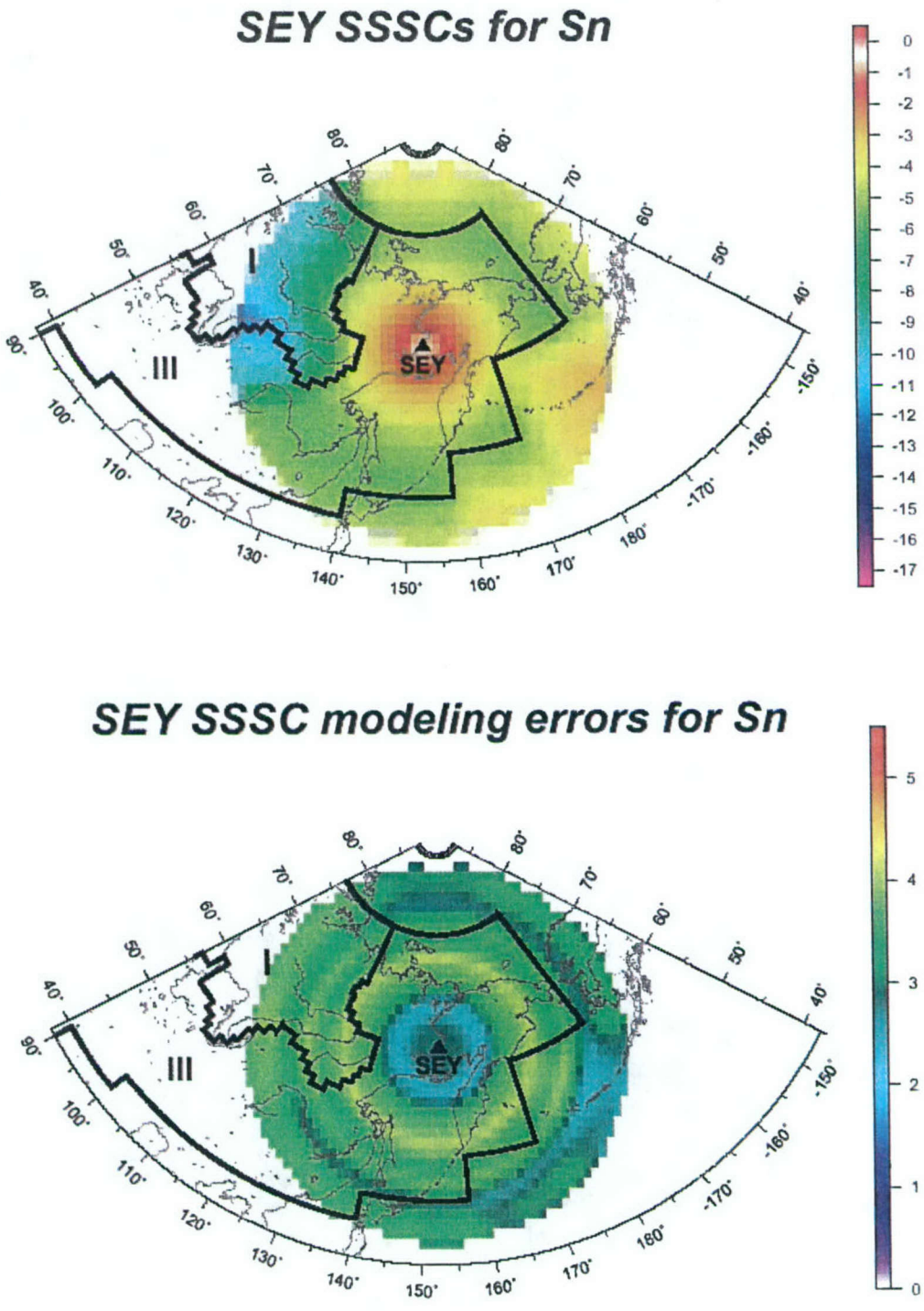


Figure 40. SEY SSSCs and Modeling Errors for Sn.

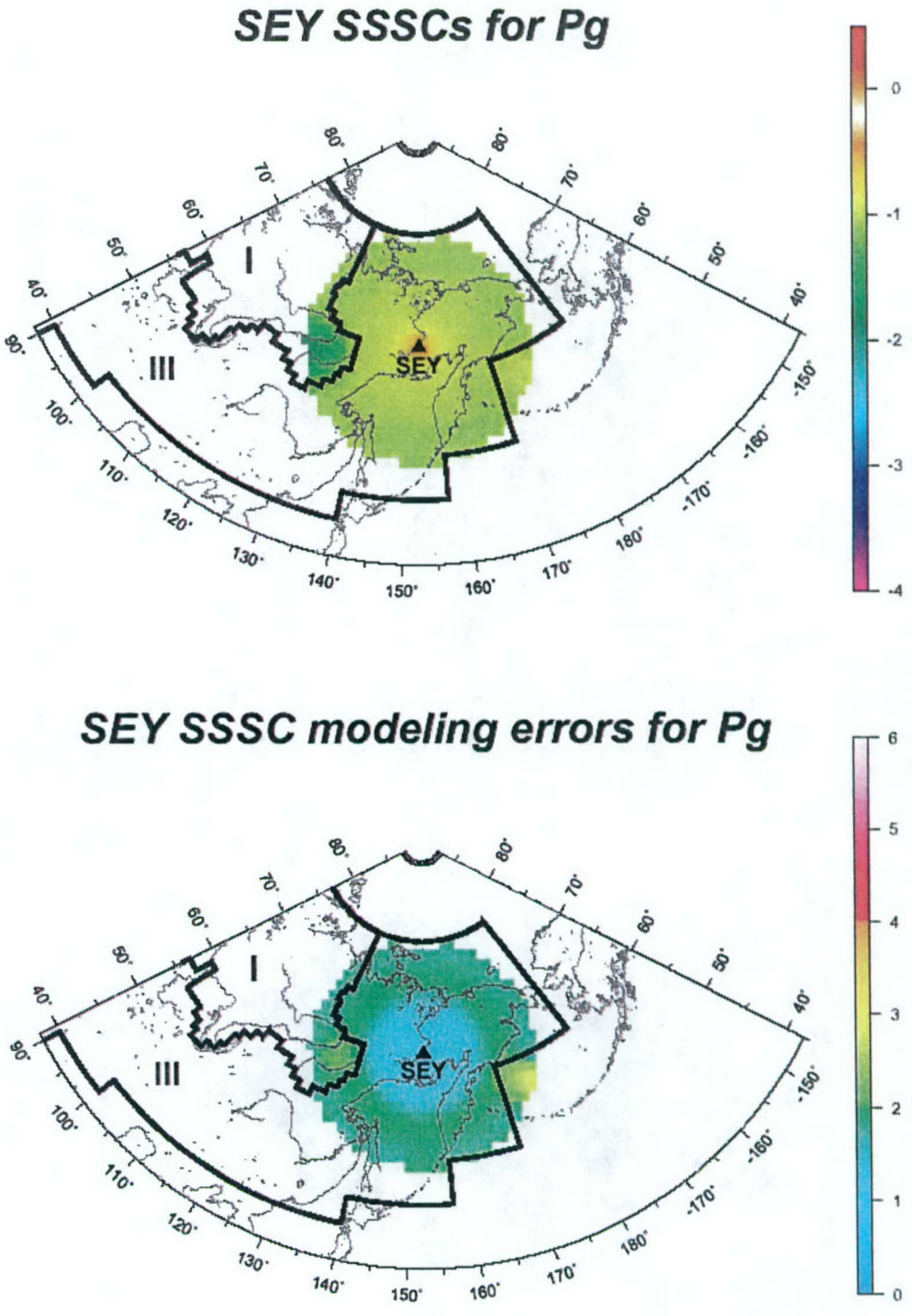


Figure 41. SEY SSSCs and Modeling Errors for Pg.

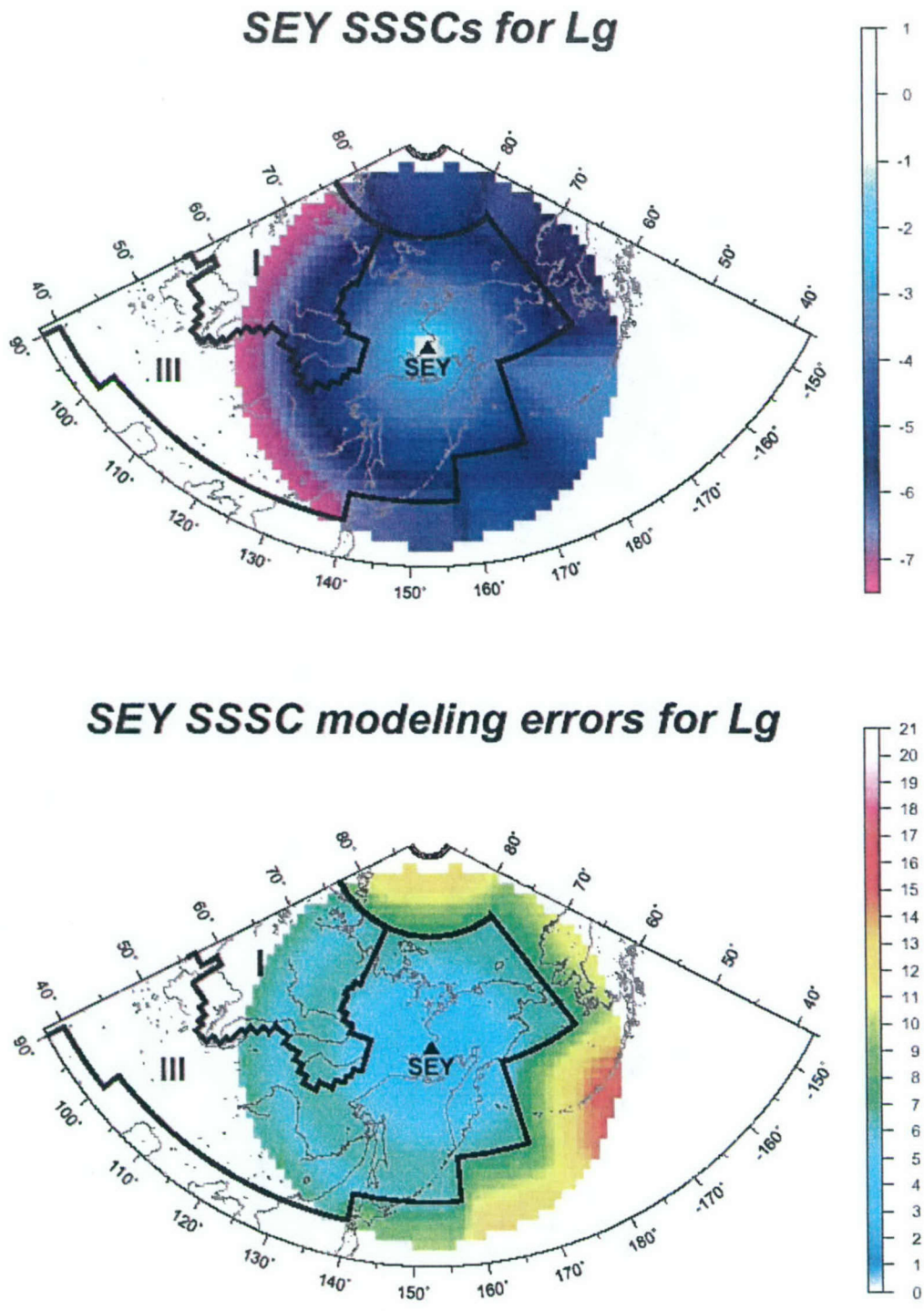


Figure 42. SEY SSSCs and Modeling Errors for Lg.

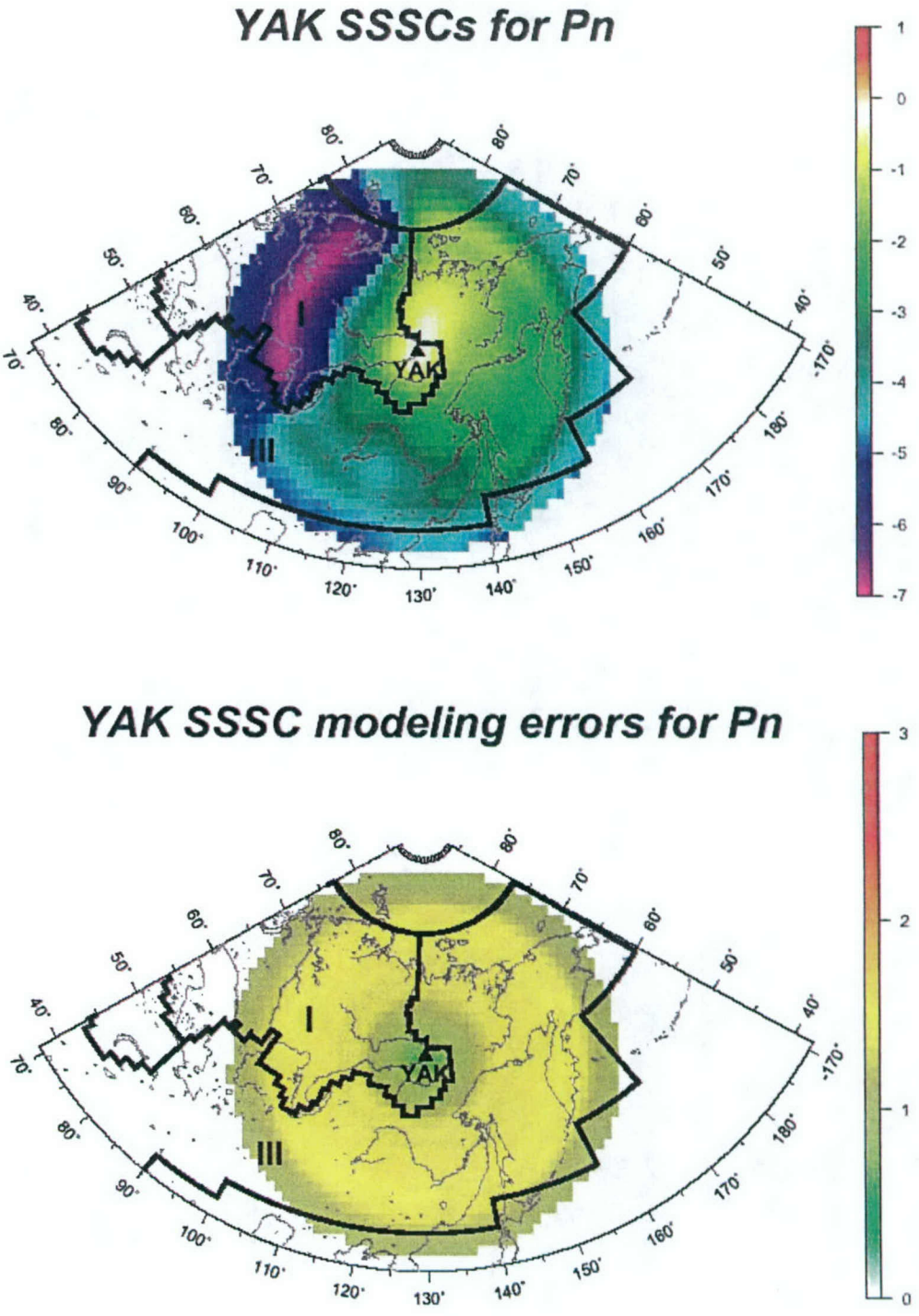
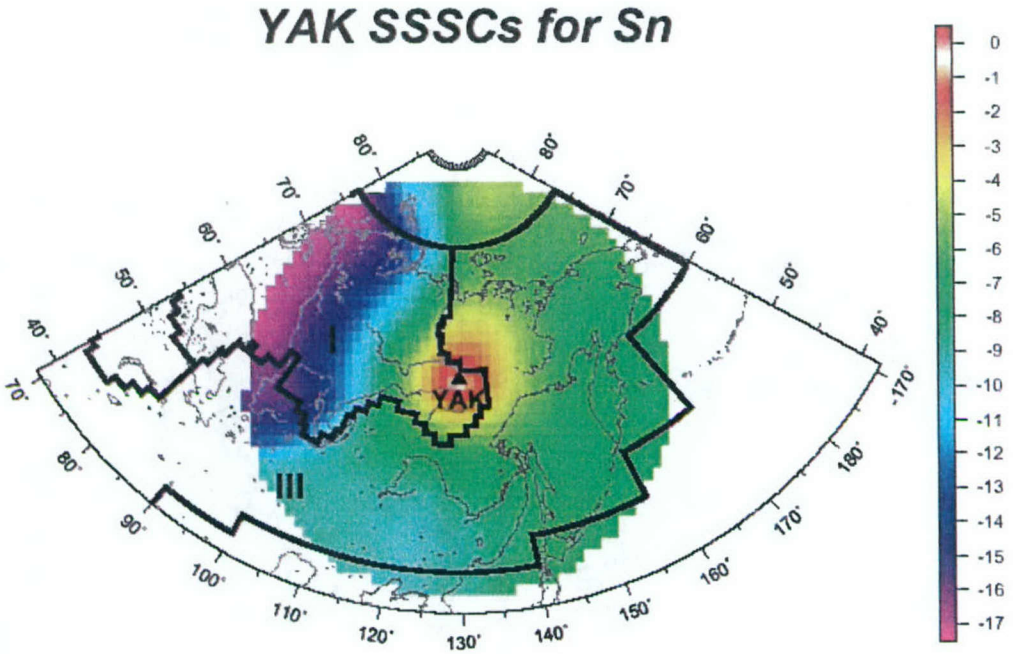


Figure 43. YAK SSSCs and Modeling Errors for Pn.



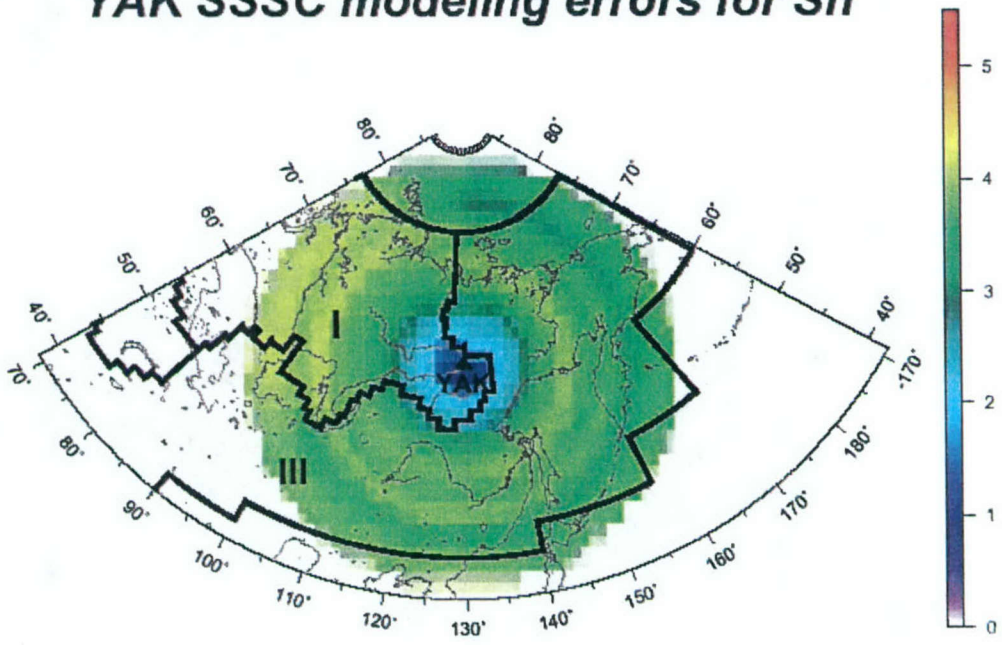
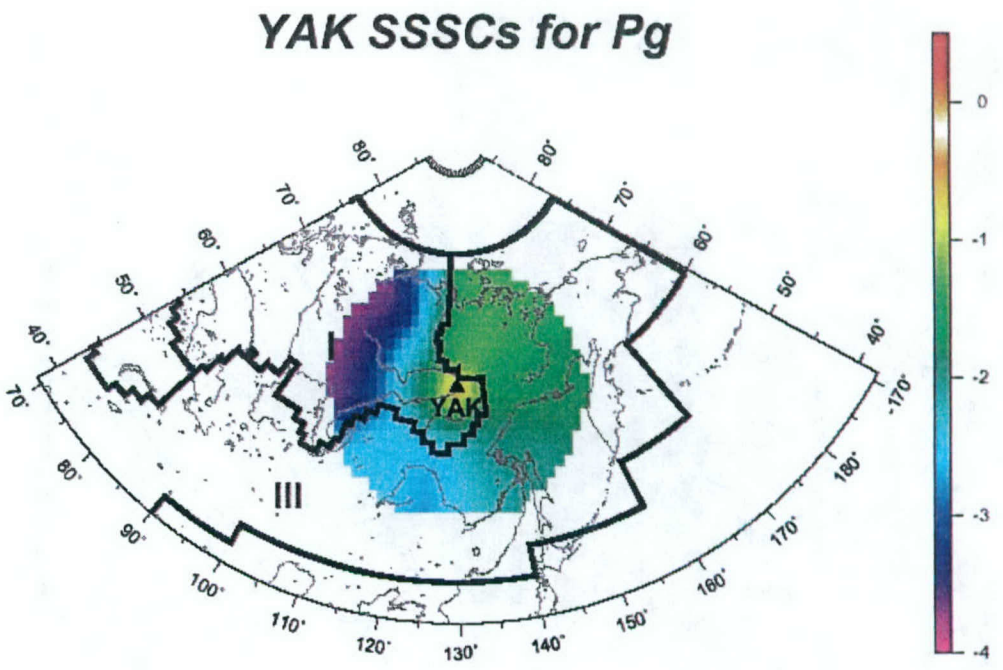


Figure 44. YAK SSSCs and Modeling Errors for Sn.



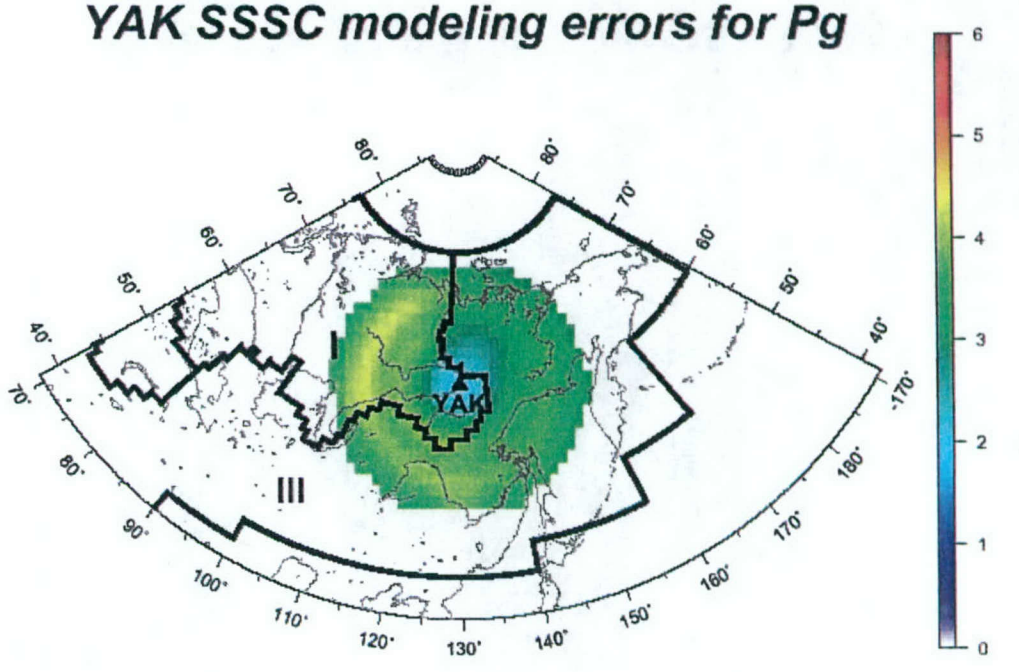


Figure 45. YAK SSSCs and Modeling Errors for Pg.

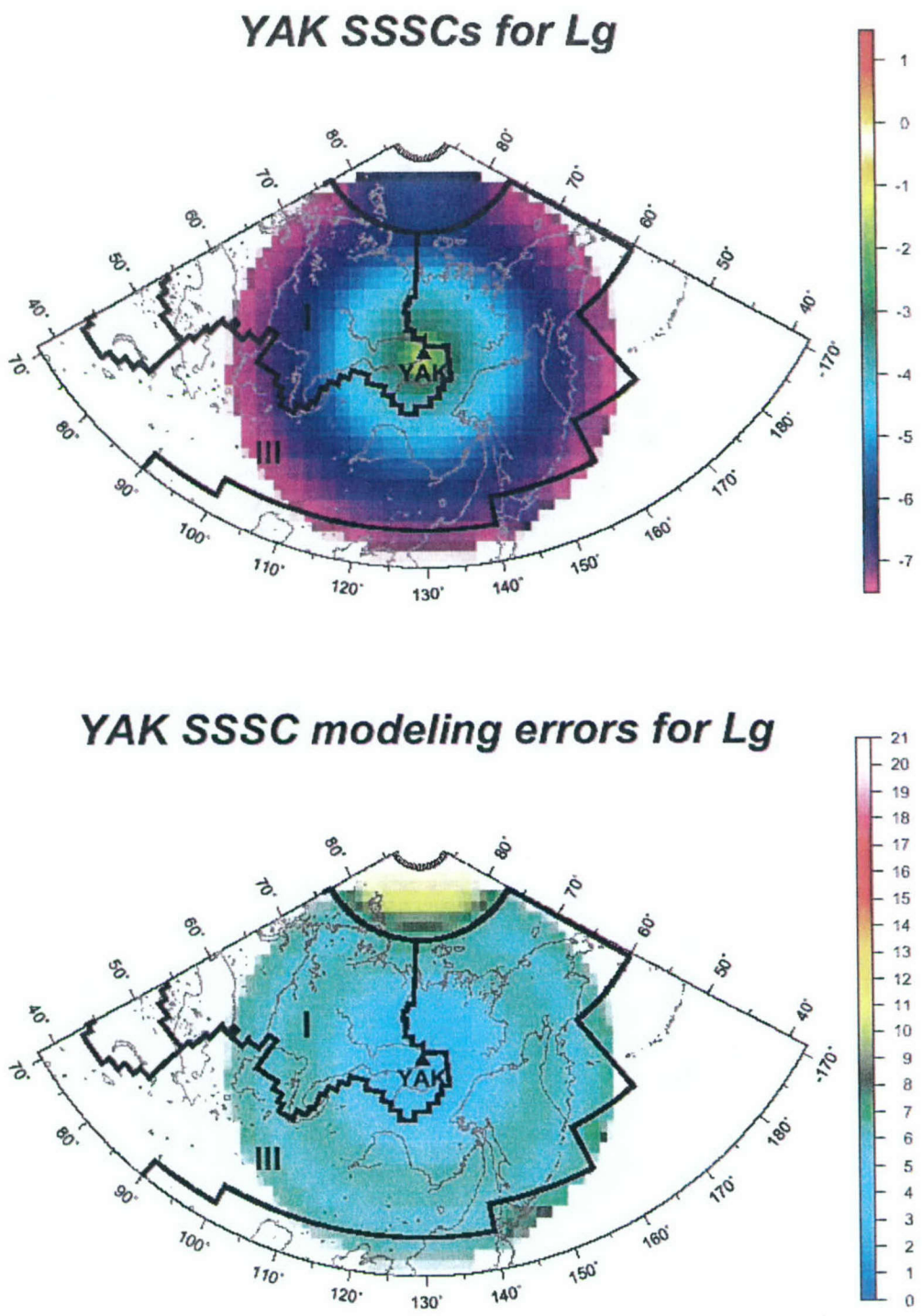


Figure 46. YAK SSSCs and Modeling Errors for Lg.

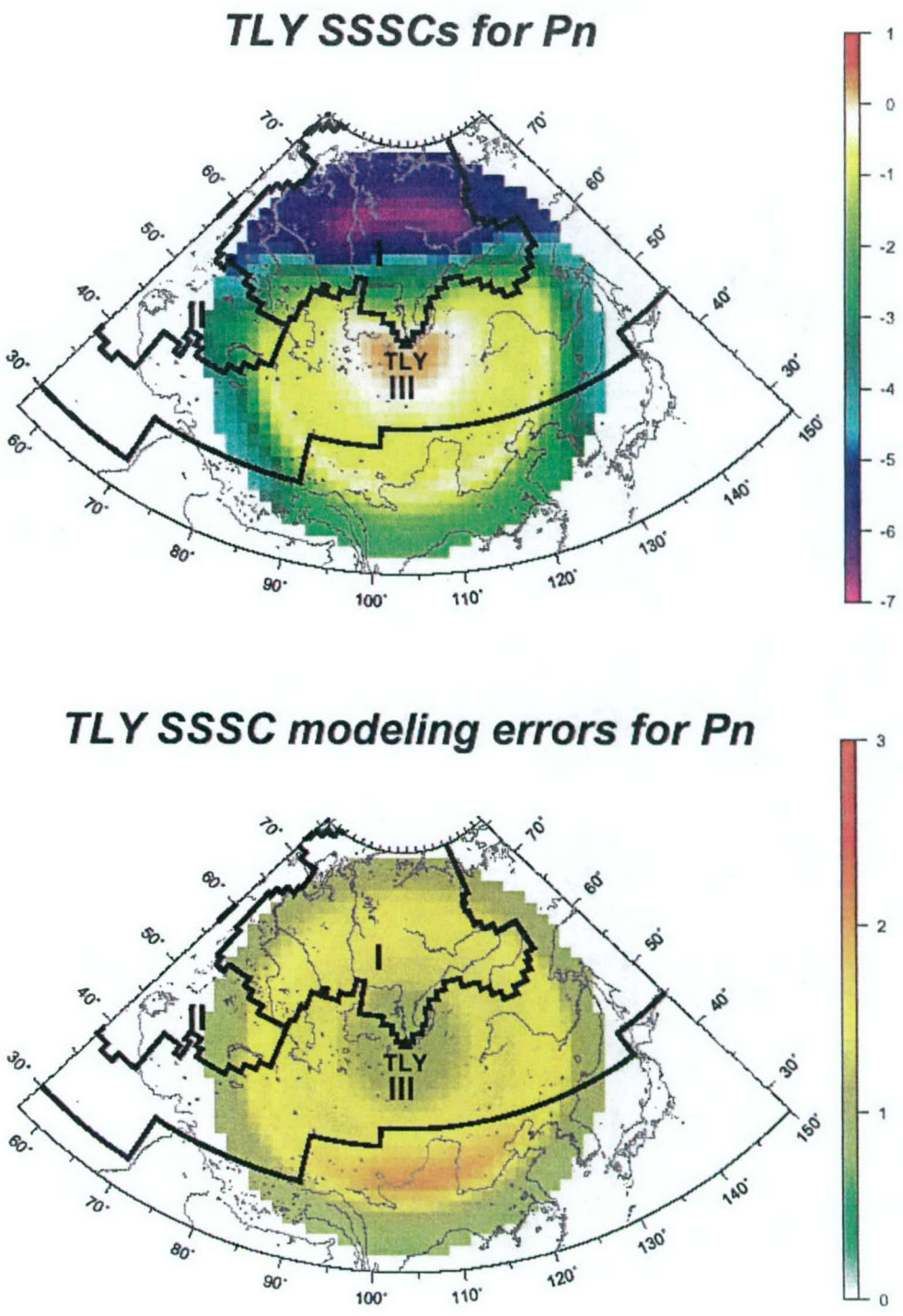


Figure 47. TLY SSSCs and Modeling Errors for Pn.

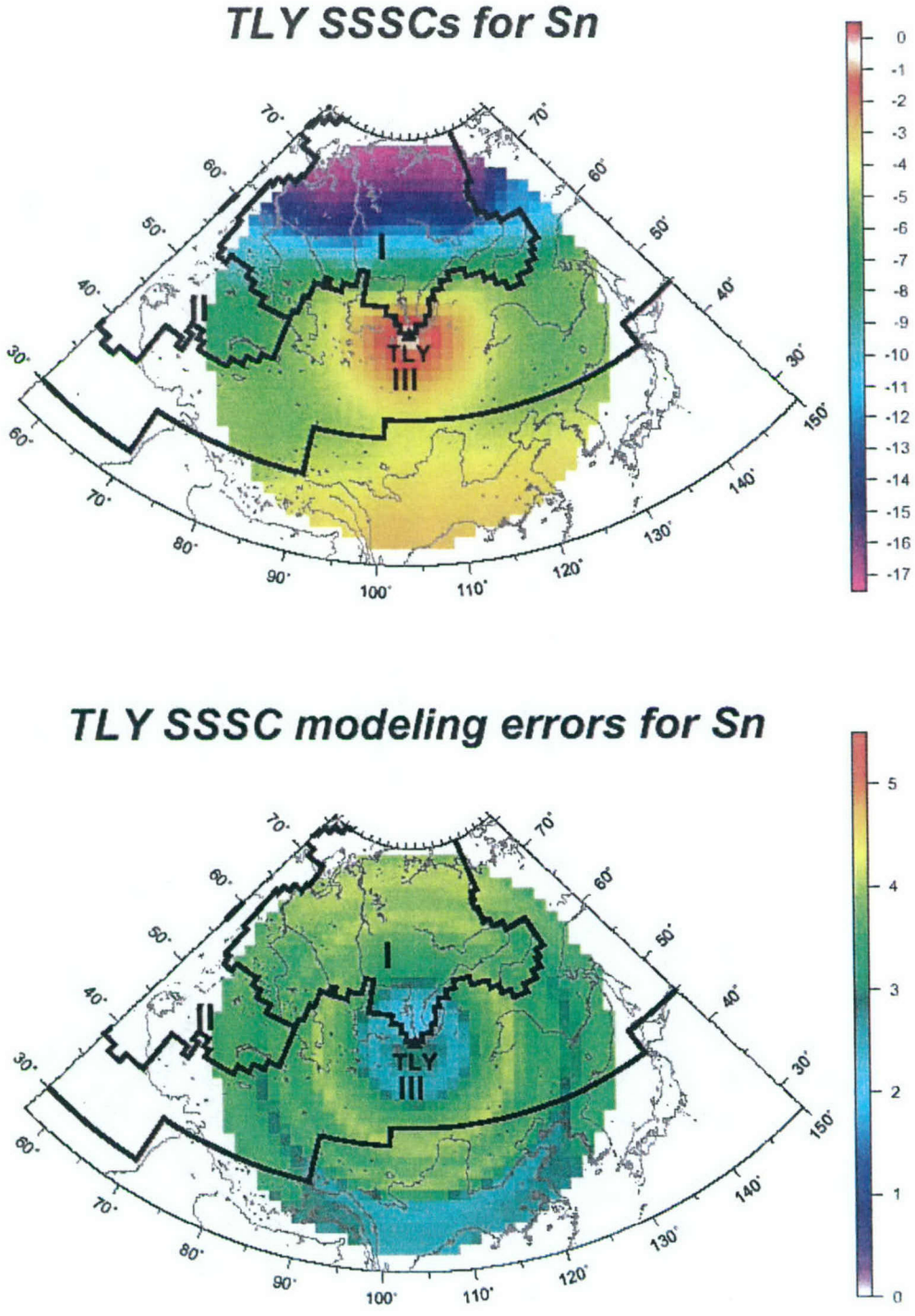


Figure 48. TLY SSSCs and Modeling Errors for Sn.

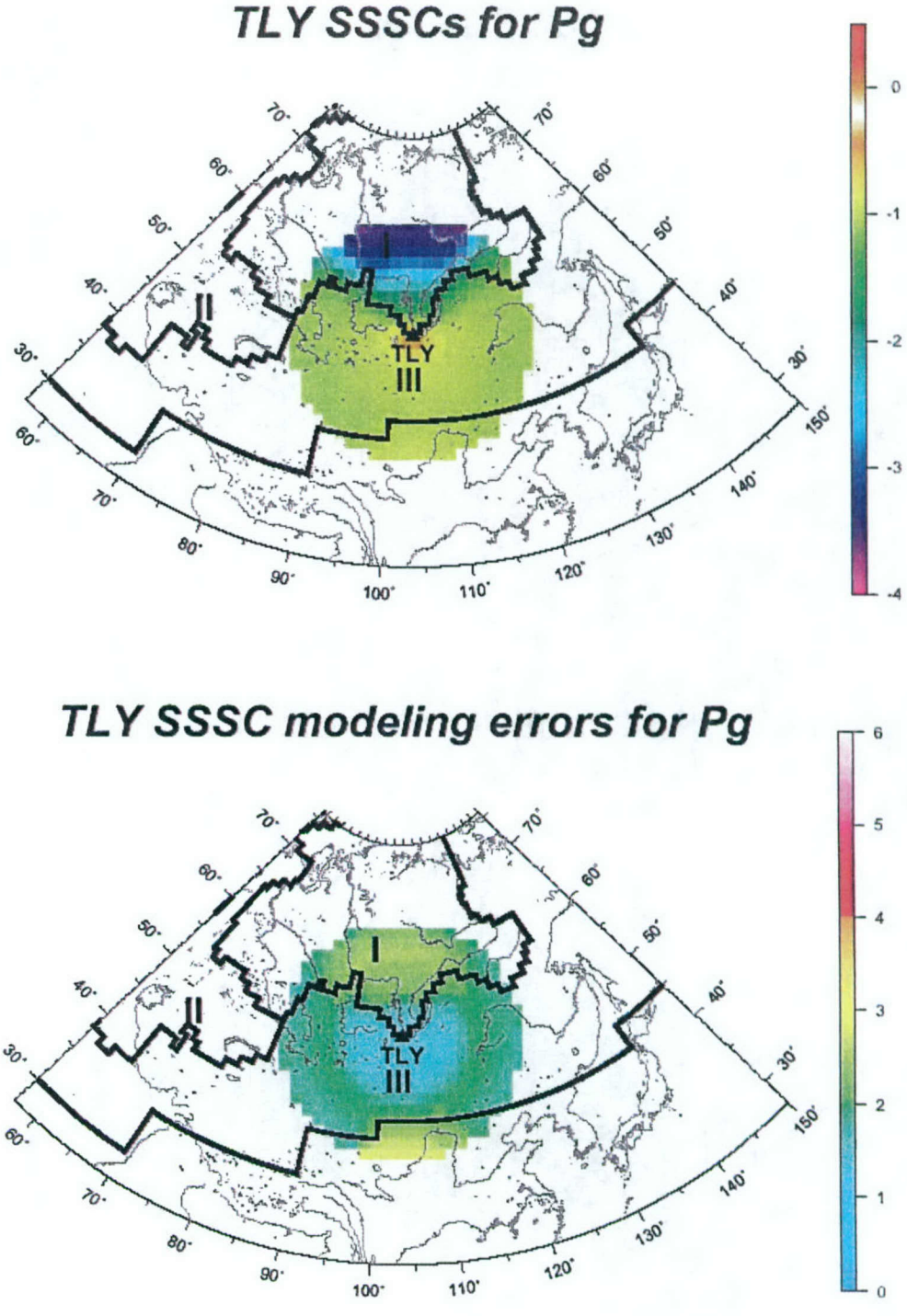
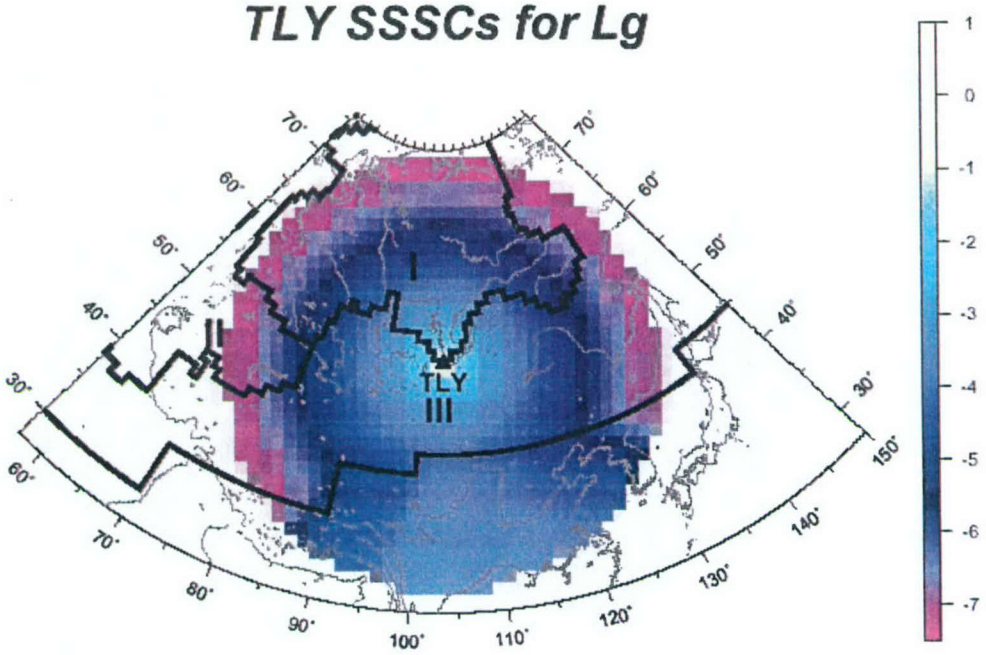


Figure 49. TLY SSSCs and Modeling Errors for Pg.



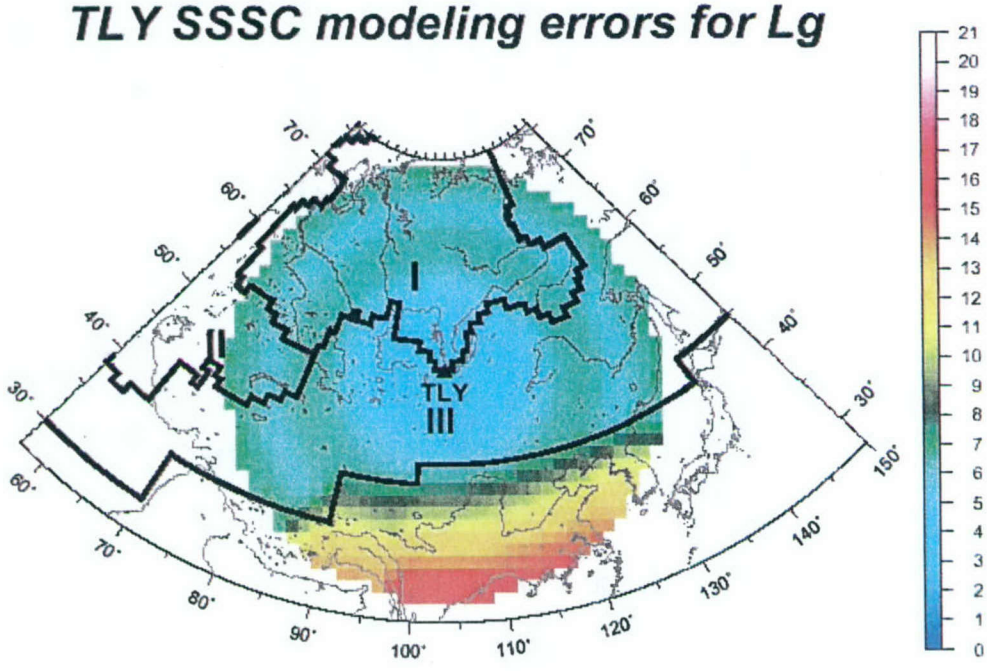


Figure 50. TLY SSSCs and Modeling Errors for Lg.

SECTION 5
ANALYSIS OF TRAVEL-TIME RESIDUALS

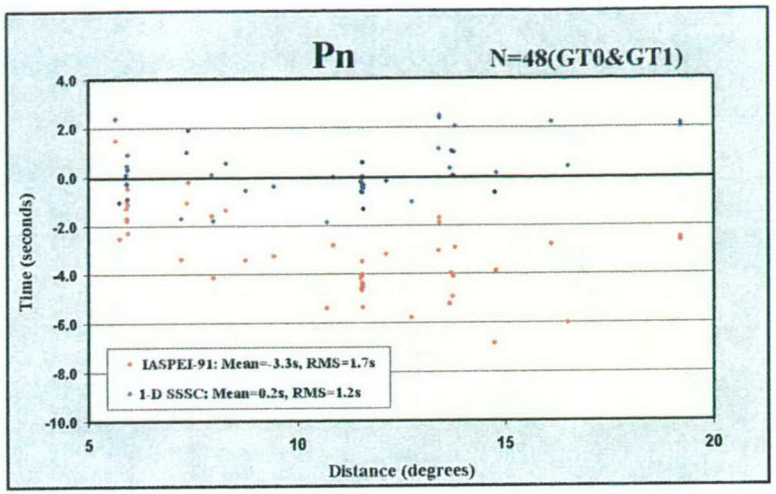
Mean and standard deviation values were calculated for differences between travel times predicted by regional travel-time tables developed and observed (for regional phases Pn, Pg, Sn and Lg) for surrogate stations of the RAS included in the IMS auxiliary network. For comparison similar parameters were calculated for travel times predicted by the IASPEI-91 travel-time tables and observed ones. All values were determined for calibration events of GT0 or GT1 quality. The distance range did not exceed 20 degrees.

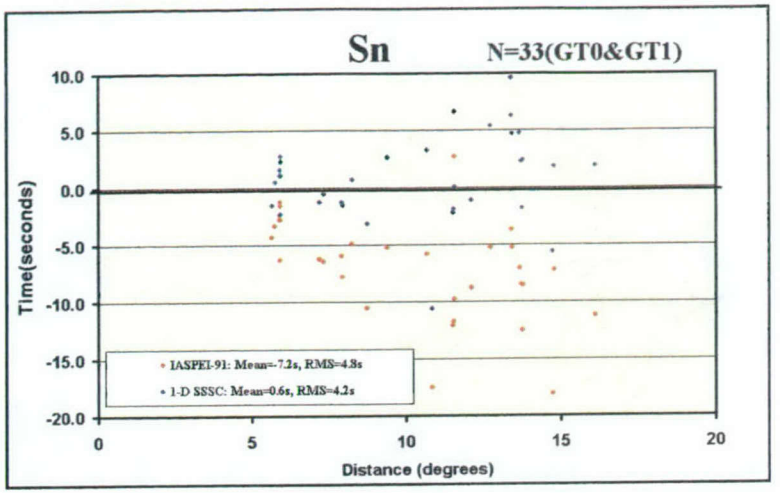
Values of calculated parameters are presented in Table 29 and illustrated for some stations in Figures 51–53.

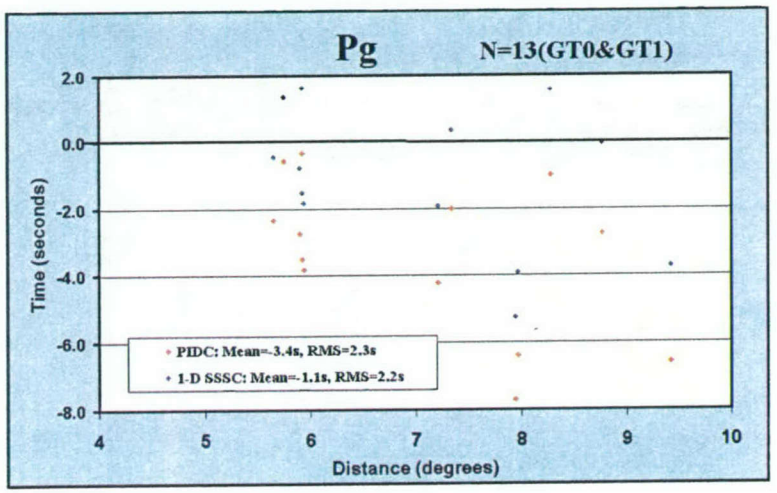
Analysis of data presented in Table 29 leads to the conclusion that predicted travel times according to the IASPEI-91 tables are substantially biased in comparison with those predicted by SSSCs developed. On the average mean deviation values for Pn waves in the case of SSSCs are 2.7 sec less as compared to those predicted by the IASPEI-91 tables, for Sn waves by 9.3 sec less and for Pg waves by 2.1 sec less. Thus, we see that travel times predicted by 1-D regional travel-time tables developed, are much closer to observed than those predicted by the IASPEI-91 tables.

Table 29. Mean and Standard Deviation Values for Differences Between Predicted and Observed Travel Times.

IMS Station	Surrogate Station	Dist., km	Phase	N	IASPEI-91		1-D SSSCs	
					Mean, sec	SD, sec	Mean, sec	SD, sec
OBN	OBN	0.0	Pn	37	-3.1	1.6	0.7	1.1
			Sn	20	-11.7	4.0	-1.5	2.8
			Pg	13	-3.2	3.6	0.4	1.6
			Lg	17	-2.3	2.4	2.6	2.7
ARU	ARU	0.0	Pn	48	-3.3	1.7	0.2	1.2
			Sn	33	-7.2	4.8	0.6	4.2
			Pg	13	-3.4	2.3	-1.1	2.2
			Lg	24	-6.1	3.9	-2.0	5.7
KIV0	PYA	28.9	Pn	20	-2.6	1.4	-0.7	0.7
YAK	YAK	0.0	Pn	21	-3.6	2.5	0.0	1.5
			Sn	16	-12.4	5.7	-1.9	3.3
			Pg	6	-2.8	1.9	-0.3	1.9
			Lg	14	-2.8	4.2	2.2	4.1
TIXI	TIK	0.0	Pn	18	-4.0	1.3	0.3	1.3
			Sn	16	-10.8	4.3	-0.2	2.5
			Pg	4	-4.6	2.1	-2.2	2.0
			Lg	13	-2.5	3.4	2.4	3.6
TLY	IRK	75.9	Pn	22	-1.9	2.5	0.0	1.3
			Sn	15	-12.0	4.1	-3.2	3.0
			Pg	8	-1.7	1.2	1.1	1.0
			Lg	15	-3.2	3.9	2.4	3.1
MA2	MA1	0.0	Pn	10	-2.7	1.3	0.6	1.1







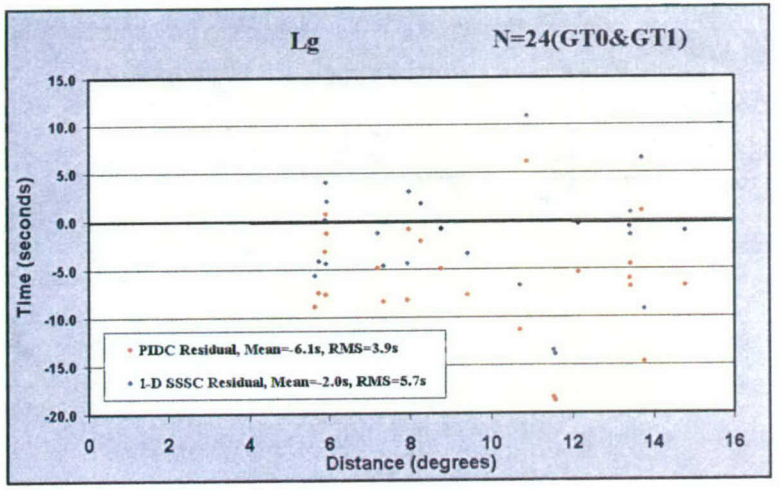


Figure 51. Travel-Time Residuals for ARU.

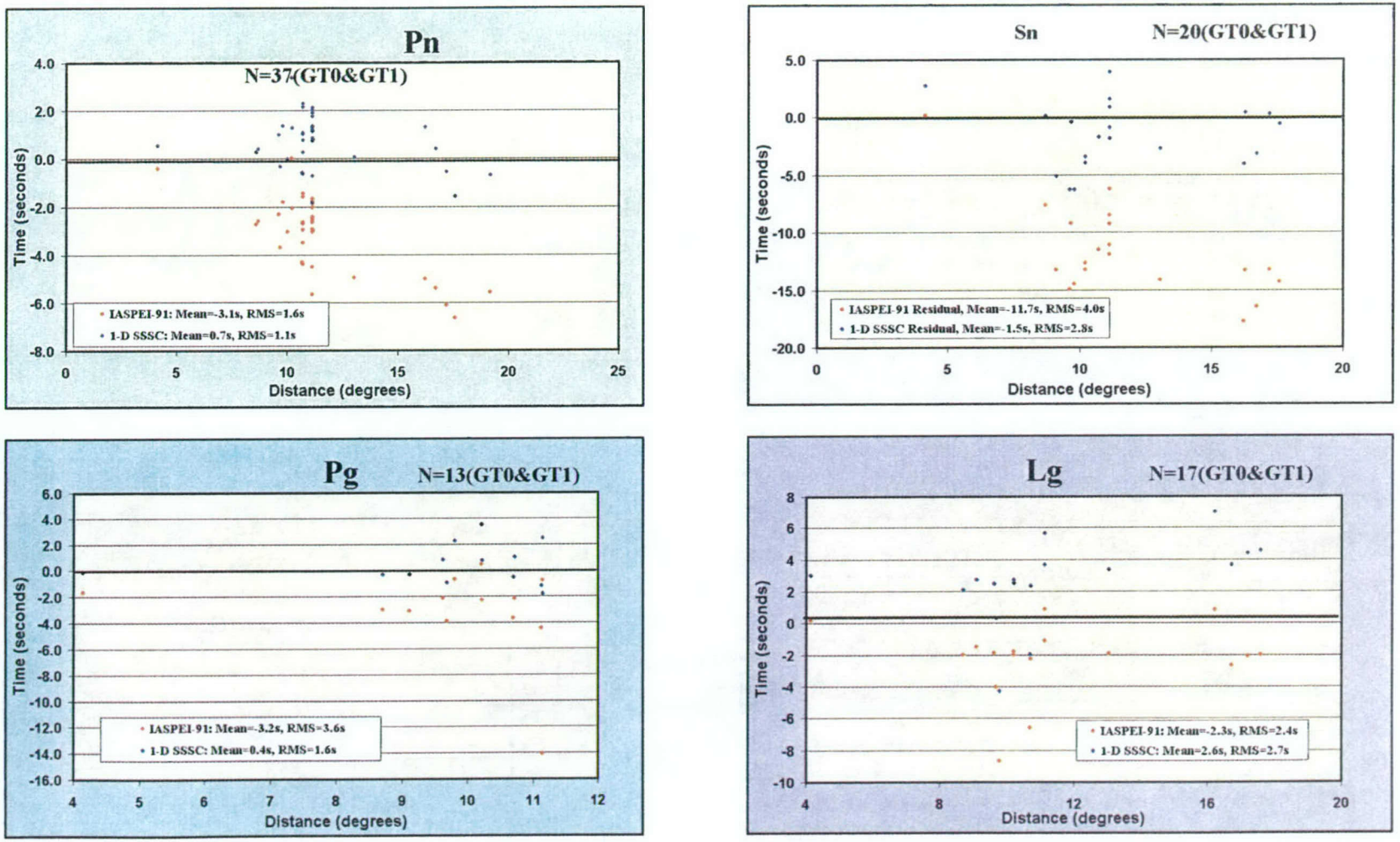


Figure 52. Travel-Time Residuals for OBN.

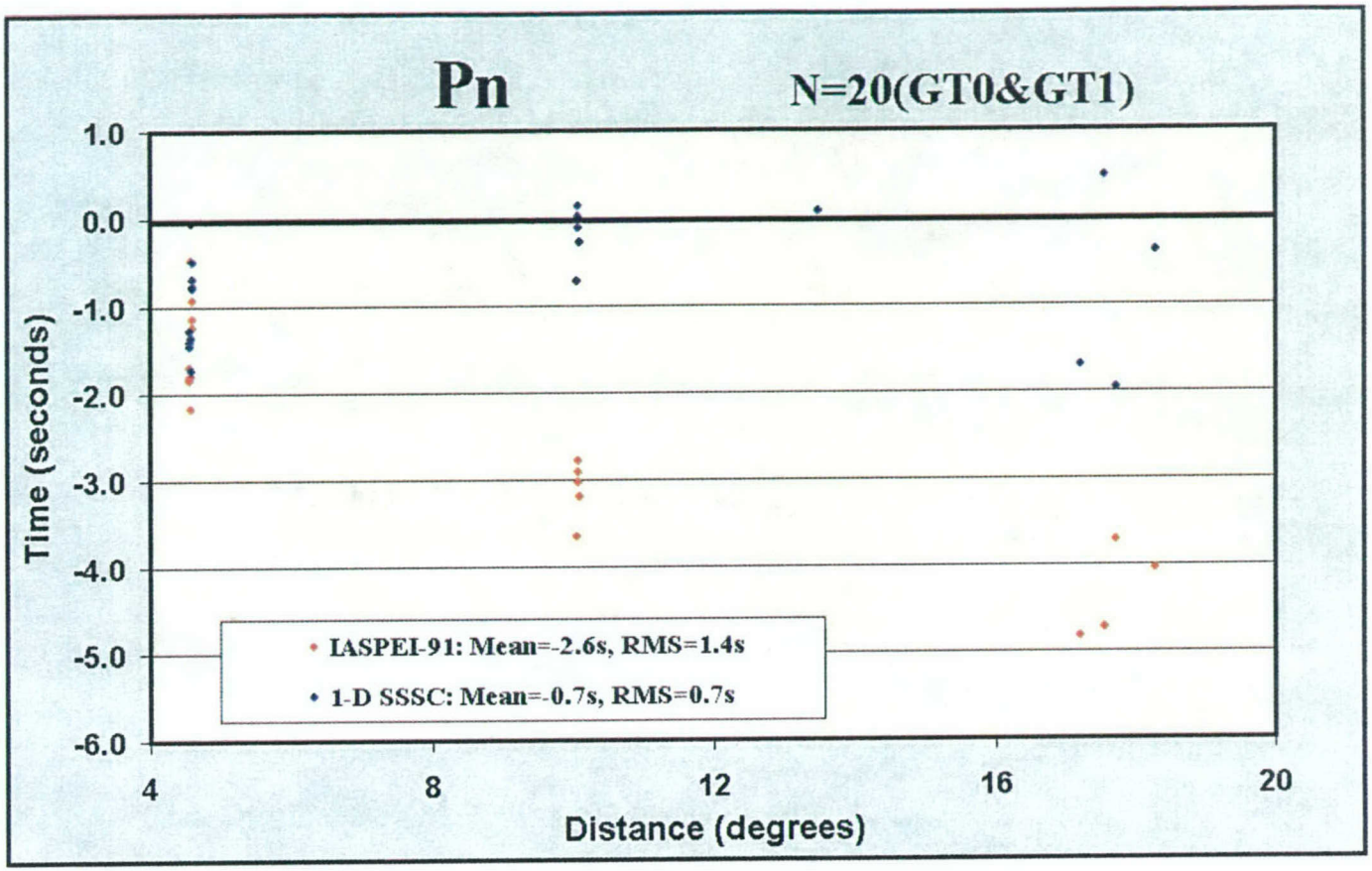


Figure 53. Travel-Time Residuals for PYA.

SECTION 6
TESTS ON RELOCATION

We have located 64 historical underground nuclear explosions in the former USSR with published ground truth origin times and locations (Bocharov et al, 1987; Sultanov et al, 1999) using the IASPEI-91 travel-time tables. We relocated this set of explosions using the newly developed travel-time tables for the generalized Northern Eurasia provinces. To support our relocation tests SSSCs were calculated for 44 surrogate stations (Table 30).

Relocation results for the aforementioned set of nuclear explosions are presented in Table 31 and may be summarized as follows:

- 84% of events moved closer to the GT epicenters with an average improvement of 8.3 km and a median improvement of 7.0 km;
- 80% of events moved closer to the GT epicenters by 20% or more with an average improvement of 8.3 km and median improvement of 6.9 km;
- 16% of events moved away from GT epicenters with an average deterioration of 6.8 km and a median deterioration of 5.8 km;
- 14% of events moved away from the GT epicenters by 20% or more with an average deterioration of 6.4 km and median deterioration of 5.6 km;
- average mislocations using the IASPEI-91 tables and the SSSCs are 24.6 km and 8.5 km, respectively;
- median mislocations using the IASPEI-91 tables and the SSSCs are 22.2 km and 7.3 km, respectively;
- 36% of GT epicenters are within the calculated 90% uncertainty ellipses using the IASPEI-91 tables and 89% of GT epicenters are within the calculated 90% uncertainty ellipses using the SSSCs;
- average uncertainty ellipse area is 853 km^2 for the IASPEI-91 tables and 546 km^2 for the SSSCs;
- median uncertainty ellipse area is 667 km^2 for the IASPEI-91 tables and 454^2 km for the SSSCs;
- average and median decrease of 90% uncertainty ellipse size is 338 km^2 and 233 km^2, respectively;
- average bias in origin time estimation is 2.4 sec with an associated standard deviation of 1.7 sec for the IASPEI-91 tables and -0.5 sec with an associated standard deviation of 0.9 sec for the SSSCs.

Table 30. Surrogate Stations for IMS Network Simulation.

IMS station	Surrogate station	Latitude, deg. N	Longitude, deg. E	Distance from IMS station, km
ARAO	KEV	69.755	27.007	65
NAO	UPP	59.858	17.627	391
FINES	KJN	64.085	27.712	310
	KJF	64.199	27.715	323
OBN	OBN	55.115	36.568	6
THR	TEH	35.738	51.386	7
KBZ	BKR	41.733	43.517	224
	BKR&	41.730	43.510	225
NRI	NRI	69.430	88.083	48
ZAL	NVS	54.850	83.266	145
	ELT	53.253	86.277	121
GEYT	VAN	37.948	58.108	6
	KAT	39.028	56.270	203
	ASH	37.950	58.350	23
AKASG	VYP&	50.190	28.273	63
	ZEL&	50.740	28.198	74
BRVK	BRV&	53.005	70.050	20
	BRV	53.083	70.250	4
	VOST&	52.720	70.970	62
	KKOR&	52.916	69.025	88
KURK	SEM	50.400	80.250	122
AKTO	NOVT&	50.460	58.000	7
	NOVG&	48.950	59.110	181
AAK	BKOL&	42.633	79.983	450
	NRN&	41.420	75.800	170
MLR	VRI	45.870	26.725	76
KIRV	VISK&	57.850	49.020	86
KIVO	PYA	44.033	43.058	29
	TI2	41.730	44.750	303
	BUY	42.810	47.130	382

IMS station	Surrogate station	Latitude, deg. N	Longitude, deg. E	Distance from IMS station, km
ARU	SVE	56.827	60.637	134
	ARU	56.416	58.570	2
	DOLG&	55.350	61.380	210
HFS	HFS	60.134	13.696	3
MAK	TLG&	43.238	77.225	546
URG	ZEA	53.738	127.250	451
TLY	IRK	52.242	104.270	76
	MOY	51.670	101.000	180
PDY	BOD	57.850	114.183	215
TIXI	TIK	71.630	128.870	3
YAK	YAK	62.016	129.717	2
MA2	MA1	60.046	150.730	50
SEY	SEY	62.917	152.417	2
YSS	YSS	46.967	142.767	4

Table 31. Nuclear Explosions (GT0) Relocation in Northern Eurasia.

No.	Date	Ndef (GAP)	IASPEI-91				SSSCs (1-D)			
			Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse	Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse
1.	69/09/02	18(120)	26.7	641	4.2	-	3.1	470	-0.6	+
2.	69/09/08	25(120)	33.3	397	3.5	-	7.9	360	-0.4	+
3.	69/09/69	14(106)	23.2	798	2.7	-	4.9	537	-0.1	+
4.	69/12/06	10(146)	59.6	798	0.2	-	4.4	572	1.4	+
5.	70/12/23	12(82)	9.1	648	1.9	+	13.8	435	-0.3	-
6.	71/07/02	18(129)	10.1	758	4.5	+	10.8	474	-0.4	+
7.	71/07/10	26(104)	10.3	625	4.2	+	15.8	407	-1.3	-
8.	71/09/19	20(143)	23.1	377	1.6	-	4.9	332	-0.6	+
9.	71/10/04	19(131)	12.2	430	3.5	-	5.8	335	-0.3	+
10.	72/08/20	17(103)	11.4	1156	3.4	+	9.5	500	-0.2	+
11.	72/09/21	14(132)	33.9	927	2.3	-	10.8	558	-0.8	+
12.	72/10/03	17(94)	30.1	781	2.9	-	10.5	461	1.2	+
13.	72/11/24_1	16(133)	16.1	650	-3.0	-	3.8	396	-0.9	+

No.	Date	Ndef (GAP)	IASPEI-91				SSSCs (1-D)			
			Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse	Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse
14.	72/11/24_2	12(175)	4.4	1164	2.7	+	6.9	656	-1.2	+
15.	73/08/15	13(157)	21.4	1051	1.6	-	7.3	547	0.0	+
16.	73/08/28	12(153)	4.9	564	1.6	+	1.3	410	-0.5	+
17.	73/09/19	12(158)	26.7	1001	0.8	-	13.2	674	-1.3	+
18.	74/08/14	8(227)	45.4	3932	3.3	-	3.8	1952	1.4	+
19.	74/08/29	16(192)	35.7	1494	2.2	-	12.2	695	-0.2	+
20.	75/08/12	10(125)	41.7	1052	2.0	-	5.4	454	-0.8	+
21.	75/09/29	13(177)	48.8	713	2.9	-	12.6	1083	-0.4	+
22.	76/05/11	19(108)	17.2	426	4.3	-	5.4	345	-0.6	+
23.	77/07/26	13(210)	61.2	941	2.9	-	9.3	1196	-0.9	+
24.	77/08/10	12(218)	20.9	1571	-0.3	+	4.4	870	0.1	+
25.	77/08/20	18(120)	2.1	570	4.7	+	7.3	438	0.1	+
26.	77/09/10	16(156)	63.8	1198	2.5	-	19.4	576	-0.2	-
27.	77/09/30	12(206)	35.9	2597	2.6	-	6.6	1154	-1.9	+
28.	78/08/09	16(98)	17.2	679	2.5	-	7.3	379	0.4	+

No.	Date	Ndef (GAP)	IASPEI-91				SSSCs (1-D)			
			Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse	Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse
29.	78/08/24	19(97)	30.5	451	4.9	-	14.0	379	0.5	-
30.	78/09/21	18(118)	56.2	419	4.3	-	10.6	363	0.0	+
31.	78/10/17_1	17(105)	23.4	667	3.3	-	5.8	348	-0.5	+
32.	78/10/17_2	17(119)	23.1	541	6.9	-	6.9	398	0.4	+
33.	79/08/12	16(94)	64.2	599	2.3	-	13.9	447	-0.1	+
34.	79/09/06	15(94)	2.9	594	4.9	+	3.8	435	0.2	+
35.	79/10/04	17(123)	10.3	580	3.7	+	6.2	463	0.3	+
36.	80/10/08	13(96)	23.1	939	4.5	-	7.0	481	1.1	+
37.	81/09/26_1	14(107)	27.4	895	3.1	-	10.5	473	-0.6	+
38.	83/07/10_1	16(132)	25.3	497	2.0	-	5.8	443	-1.2	+
39.	83/09/24_1	14(138)	20.0	983	3.7	-	10.1	544	1.1	+
40.	84/07/21_1	16(81)	9.8	609	3.7	+	6.9	393	0.1	+
41.	84/09/17	15(114)	51.3	935	2.7	-	14.6	472	-0.4	+
42.	85/07/18	17(104)	25.9	506	3.6	-	16.7	401	-1.3	-
43.	88/08/22	17(98)	27.7	355	4.3	-	7.6	418	0.4	+

No.	Date	Ndef (GAP)	IASPEI-91				SSSCs (1-D)			
			Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse	Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse
44.	88/09/06	16(84)	5.4	379	4.7	+	8.5	327	0.5	+
Semipalatinsk Test Site										
45.	64/11/16	12(119)	18.7	671	0.6	-	13.9	440	-2.0	-
46.	65/11/21	12(118)	25.3	753	0.8	-	9.1	510	-1.6	+
47.	66/03/20	12(167)	34.2	627	2.3	-	12.6	654	0.2	+
48.	66/06/29	16(117)	5.8	663	1.0	+	4.9	417	-1.1	+
49.	66/10/19	13(119)	9.1	628	0.1	+	1.3	454	-0.5	+
50.	67/02/26	13(121)	8.5	589	2.1	+	10.5	449	-0.7	+
51.	67/10/17	13(117)	12.6	642	0.6	+	11.6	406	-1.9	+
52.	68/06/19	18(116)	4.9	440	1.2	+	4.4	322	-1.2	+
53.	68/09/29	14(120)	7.3	559	2.1	+	2.2	421	-0.4	+
54.	69/03/07	11(157)	106.3	903	-1.1	-	19.0	765	-1.5	-
55.	69/11/30	13(121)	22.9	930	0.9	-	5.8	501	-0.6	+
56.	70/01/29	12(233)	5.8	1562	1.1	+	8.5	950	-1.0	+
57.	70/06/28	13(126)	16.2	667	2.3	-	6.6	510	-0.8	+

No.	Date	Ndef (GAP)	IASPEI-91				SSSCs (1-D)			
			Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse	Mis-location, km	Ellipse area, km^2	_ To, sec	GT within ellipse
58.	71/04/25	17(114)	10.5	403	2.6	+	9.3	337	-0.3	+
59.	71/06/30	18(117)	24.2	443	1.2	-	6.6	363	-1.2	+
60.	71/12/30	16(113)	11.8	558	1.7	+	3.1	406	-1.0	+
61.	72/02/10	13(117)	12.6	912	1.2	+	5.8	481	-1.3	+
62.	72/06/07	9(233)	39.4	2885	-2.4	-	20.2	1436	-3.7	+
63.	72/11/02	15(117)	19.2	764	2.0	-	1.2	444	-0.7	+
64.	72/12/10_1	9(117)	9.1	1102	0.7	+	11.0	658	-1.3	+
Mean:			**24.6 km**	**853 km**	**2.4 s**	**36%**	**8.5 km**	**546 km**	**-0.5s**	**89%**
St. Dev.:			**19.1 km**	**355 km**	**1.7 s**		**4.5 km**	**284 km**	**0.9 s**	

The aforementioned results allow one to conclude the newly developed 1-D regional travel-time tables are an effective tool to be used for seismic source location in Northern Eurasia.

SECTION 7
REVIEW OF HISTORICAL AND RECENTLY PUBLISHED DATA ON PARAMETERS OF PNES CARRIED OUT IN THE FORMER USSR

We present new results of our review of historical and recently published data on the parameters of PNEs in the former Soviet Union. The key points of our review are related to data on PNE locations. Some information related to PNE origin times is also presented.

For project performance, we concentrated on new or historical information not previously taken into account on location of PNEs for which only seismologically determined locations are available.

7.1 NEW DATA ON PNES LOCATIONS.

The paper of Sultanov *et. al.*, 1999, contains ground truth data on actual locations for 79 explosions (listed with a precision of 0.001 degrees). Also, for an additional 37 PNEs seismologically determined locations are included. It is stated that seismologically determined locations for PNEs "with yields greater than about 10 kt are considered to be accurate to within 5 to 10 km." The paper of Sultanov *et. al.*, 1999, says nothing on a location accuracy for PNEs with yields less than 10 kt. It is worth highlighting that from the 37 aforementioned explosions 22 explosions were with yields less than 10 kt.

We found independent data on locations of 11 PNE events from the aforementioned 37 PNEs.

7.2 PNE TAWDA.

This PNE was carried out on October 6, 1967, in the Tyumen region to study the creation of stable underground cavities in clay. The ISC seismic location of this PNE is listed in Table 32.

Table 32. Seismic Locations for PNE Tawda (6 October 1967, Tyumen Region).

Location (ISC)		Location (ISC&Regional)		Yield, kt	m_b (ISC)
Lat., deg.	Long., deg.	Long., deg.	Lat., deg.		
57.71	65.22	57.671	65.398	0.3	4.7

The only additional fact on this PNE location was found in the Tyumen Courier Newspaper (2000). This newspaper contains the note that the PNE Tawda was conducted in the Nizhnyaya Tawda district (Tyumen region) near the settlement of Chugunaevo.

To reduce the uncertainty of the aforementioned note "near the settlement of Chugunaevo" we took into account the yield value for this PNE and relative locations of nearby settlements, villages and local roads. Based on these facts we have made the assumption that the possible region where this PNE was conducted may be presented by the partial ring domain with the following parameters (Figure 54):

- internal radius of 2.5 km;
- external radius of 5 km;
- central angle of about 160 degrees.

Also, we relocated this PNE using regional and ISC data (we used the regional travel-time tables developed in Kirichenko, Kraev, (2000)). The ISC&Regional seismic location of this PNE is listed in Table 32. Figure 54 illustrates the results of our studies. The distances in Figure 54 are between the approximate center of the possible region where the PNE Tawda was conducted and seismically determined locations. It may be concluded that the range of discrepancies between possible actual and ISC locations is from 22 km to 33 km. In case of use ISC and regional data the range of discrepancies is less: from 11 km to 21 km.

7.3 PNE TAIGA.

PNE Taiga was a multiple excavation explosion of three charges (Atomic Science ..., 1977, Mikhailov, 1994, Nordyke, 1975). A few years after this PNE a small lake was created (Izrael *et. al.*, 1994, Lobanov, 2001, Popyvanov *et. al.*, 2000). This lake became a major object of our search. The dimensions of this lake are listed in a number of publications:

- Mikhailov *et. al.*, 1994, contains the dimensions as 700m x 340m;
- Izrael *et. al.*, 1998, – as 700m x 500m;
- Lobanov, 2001, – as 750 m x 350m.

Information on the location of the excavated lake was found as follows:

- near Chusovskoye lake (Izrael Yu.A. *et. al.*, 1994; Lobanov M., 2001);
- 6 km to the north from Chusovskoye lake (Bulatov, 1996; Kovalenko, 1999);
- 20 km from the settlement of Chusovskoy, former Golovnoy (Lobanov, 2001).

The lake corresponding the aforementioned information may be found on the maps of the scales as of 1:200 000 and 1:500 000. The location of this lake is illustrated by Figure 55.

The ISC seismic location of this PNE is listed in Table 33.

Table 33. Seismic Locations for PNE Taiga (23 March 1971, Perm Region).

Location (ISC)		Location (ISC&Regional)		Yield, kt	m_b (ISC)
Lat., deg.	Long., deg.	Long., deg.	Lat., deg.		
61.3905	56.2167	61.312	56.456	15 x 3	5.5

Also, we relocated this PNE using regional and ISC data (we used the regional travel-time tables developed in Kirichenko, Kraev, (2000)). The ISC&Regional seismic location of this PNE is listed in Table 33. Figure 56 illustrates the results of our studies. It is clear that joint use of ISC and regional data allows to substantially reduce the mislocation value (from 23 km to 7 km). Also, we note that for this event with magnitude m_b=5.5 the mislocation value based on ISC data only is much higher than 10 km (the upper limit stated by Sultanov *et. al.*, 1999).

7.3.1 PNE Crystal.

This PNE was conducted on October 2, 1974, near the diamond mine Udachnaya (Lucky).

The possible region where this PNE was conducted has been identified based on the following information on this PNE location:

- 5-6 km to the north from the city of Udachnyy (Bulatov, 1996);
- 2.5 km to the north east from the settlement of Udachnyy-2 (Kovalenko, 1998).

To take into account possible uncertainties of the "north-east" direction determination as well as the distance as of 2.5 km from the settlement of Udachnyy-2, we have made the assumption that the possible region may be presented by the partial ring domain with the following parameters (Figure 57):

- internal radius of 2.0 km;
- external radius of 3.5 km;
- central angle of about 45 degrees.

Figure 57 presents locations in the vicinity of PNE Crystal.

The ISC seismic location of this PNE is listed in Table 34.

Table 34. Seismic Locations for PNE Crystal (2 October 1974, Yakutiya).

Location (ISC)		Location (ISC&Regional)		Yield, kt	m_b (ISC)
Lat., deg.	Long., deg.	Long., deg.	Lat., deg.		
66.1120	112.6536	112.293	66.343	1.8	4.6

Also, we relocated this PNE using regional and ISC data (we used the regional travel-time tables developed in 2000 and presented in the second annual report (Kirichenko, Kraev, 2000). The ISC&Regional seismic location of this PNE is listed in Table 34. Figure 58 illustrates the results of our studies. The distances in Figure 58 are between the approximate center of the possible region where the PNE Crystal was conducted and seismically determined locations. It is obvious that joint use of ISC and regional data allows to substantially reduce the mislocation value (from 40 km to 14 km).

7.3.2 PNEs Helium.

All these explosions were conducted at the Gezh (Gaeja) oil field to assist in the extraction of oil. All PNEs had yields of 3.2 kt.

The only information found on these PNEs location is related to the Gezh oil-field (Mikhailov, 1994). This oil field was identified based on the following information:

- note on the location of PNEs Helium as 20 km to the south-east from the city of Krasnovishersk (Mikhailov, 1994);
- position of oil wells of the Gezh oil field on the map of the scale 1:500 000;
- position of the Gezh oil field from the paper of Zuyeva, 1984.

Figures 59, 60 and 61 illustrate objects location in the vicinity of PNEs Helium.

The ISC seismic locations of these PNEs are listed in Table 35.

Table 35. Seismic locations for PNEs Helium (Perm Region).

PNE Name	Date, mm-dd-yy	Location (ISC)		Location (ISC&Regional)		m_b (ISC)
		Lat., deg.	Long., deg.	Lat., deg.	Long., deg.	
Helium-1	09/02/81	60.5928	55.7044	60.257	56.913	4.4
Helium-2-1	08/28/84	60.8158	57.0590	60.370	57.096	4.4
Helium-2-2	08/28/84	60.6924	57.4637	60.439	57.320	4.4
Helium-3-1	04/19/87	60.6173	57.1945	60.327	57.133	4.5
Helium-3-2	04/19/87	60.8123	57.5443	60.302	57.155	4.5

Also, we relocated these PNEs using regional and ISC data (we used the regional travel-time tables developed in Kirichenko, Kraev, (2000)). The ISC&Regional seismic locations of these PNEs are listed in Table 35. Figures 59, 60 and 61 illustrate the results of our studies. The distances in Figures 58,59 and 60 are between the approximate center of the Gezh oil field and seismically determined locations. It is possible to conclude that joint use of ISC and regional data substantially reduces the mislocation values (from 40-95 km 9-23 km) despite the fact that we are forced to use the approximate center of the Gezh oil field as a reference location for PNEs Helium.

7.3.3 PNE Magistral.

This PNE was conducted on June 25, 1970 at the Sovkhoznoye gas field (Mikhailov, 1994) to create an underground storage cavity.

No other data for this PNE was found. Nonetheless, taking into account the location of the Sovkhoznoye gas field noted on the map of the Orenburg region of the scale of 1:200 000, we have an opportunity to estimate how close seismic locations are to this gas field.

To identify the possible region where this PNE was conducted we have made the assumption that this region may be presented by a ring domain with the internal radius of 1 km and the external radius of 2 km taking into account the values of yield and depth of burial for this PNE as well as the fact that the PNE was conducted *at* the gas field. The last fact may be interpreted as that its location should be close enough to the gas field. Some part of the aforementioned ring domain, which is close to the main road to the gas field, was excluded (Figure 62).

Figure 62 presents locations in the vicinity of PNE Magistral.

The USCGS seismic location of this PNE is listed in Table 36.

Table 36. Seismic Locations for PNE Magistral (25 June 1970, Orenburg region).

Location (USCGS)		Location (USCGS&Regional)		Yield, kt	m_b (USCGS)
Lat., deg.	Long., deg.	Long., deg.	Lat., deg.		
52.20	55.70	52.326	55.590	2.3	4.9

Also, we relocated this PNE using regional and USCGS data (we used the regional travel-time tables developed in 2000 and presented in the second annual report (Kirichenko, Kraev, 2000). The USCGS&Regional seismic location of this PNE is listed in Table 36. Figure 62 illustrates the results of our studies. The distances in Figure 61 are between the gas field Sovkhoznoye and seismically determined locations. For this PNE the mislocation values are close for both data sets (USCGS and USCGS&Regional).

7.3.4 PNE Fakel (10 July 1972, Kharkov region).

This PNE was conducted on July 10, 1972 at the Krestishchenskoye gas field (Mikhailov, 1994) to extinguish burning gas.

The possible region, where this PNE was conducted, has been identified based on the following information on this PNE location:

- 2 km from the village of Krestishche, near the Moscow-Simferopol highway (Danilko, 2000).

Based on the aforementioned information we have made the assumption that the possible region where this PNE was conducted may be presented by the ring domain with the following parameters (Figure 63):

- internal radius of 1.5 km;
- external radius of 3 km.

It should be noted that the aforementioned region may be further reduced by taking into account the nearby Moscow-Simferopol highway and regional road.

Figure 63 presents locations in the vicinity of PNE Fakel.

The ISC seismic location of this PNE is listed in Table 37.

Table 37. Seismic locations for PNE Fakel (9 July 1972, Kharkov region).

Location (ISC)		Location (ISC&Regional)		Yield, kt	m_b (ISC)
Lat., deg.	Long., deg.	Long., deg.	Lat., deg.		
49.7752	35.4475	49.571	35.546	3.8	4.8

As above, we relocated this PNE using regional and ISC data (we used the regional travel-time tables developed in 2000 and presented in the second annual report (Kirichenko, Kraev, 2000). The ISC&Regional seismic location of this PNE is listed in Table 37. Figure 63 illustrates the results of our studies. The distances in Figure 63 are between the village of Krestishche and seismically determined locations. It is obvious that joint use of ISC and regional data allows to substantially reduce the mislocation value.

7.3.5 PNE Rift-3.

This PNE was conducted on 30 July 1982 for deep seismic sounding.

The only additional fact for the location of this PNE was found in the book of Bulatov, 1996. This book contains the note that the PNE Rift-3 was carried out near the village of Borokhal.

Figure 64 presents locations in the vicinity of PNE Rift-3.

The ISC seismic location of this PNE is listed in Table 38.

Table 38. ISC Seismic Location for PNE Rift-3 (30 July 1982, Irkutsk region).

Location (ISC)		Yield, kt	m_b (ISC)
Lat., deg.	Long., deg.		
53.8043	104.1426	8.5	5.0

Taking into account that the distance between the village of Borokhal and ISC location for PNE Rift-3 is about 12 km, it is supposed that the ISC location is close to the actual location, within 7 to 10 km, with the assumptions that (a) the distance from PNE Rift-3 to the village of Borokhal is at minimum 5 km and (b) the actual location of this PNE was somewhere to the north-east from the village of Borokhal.

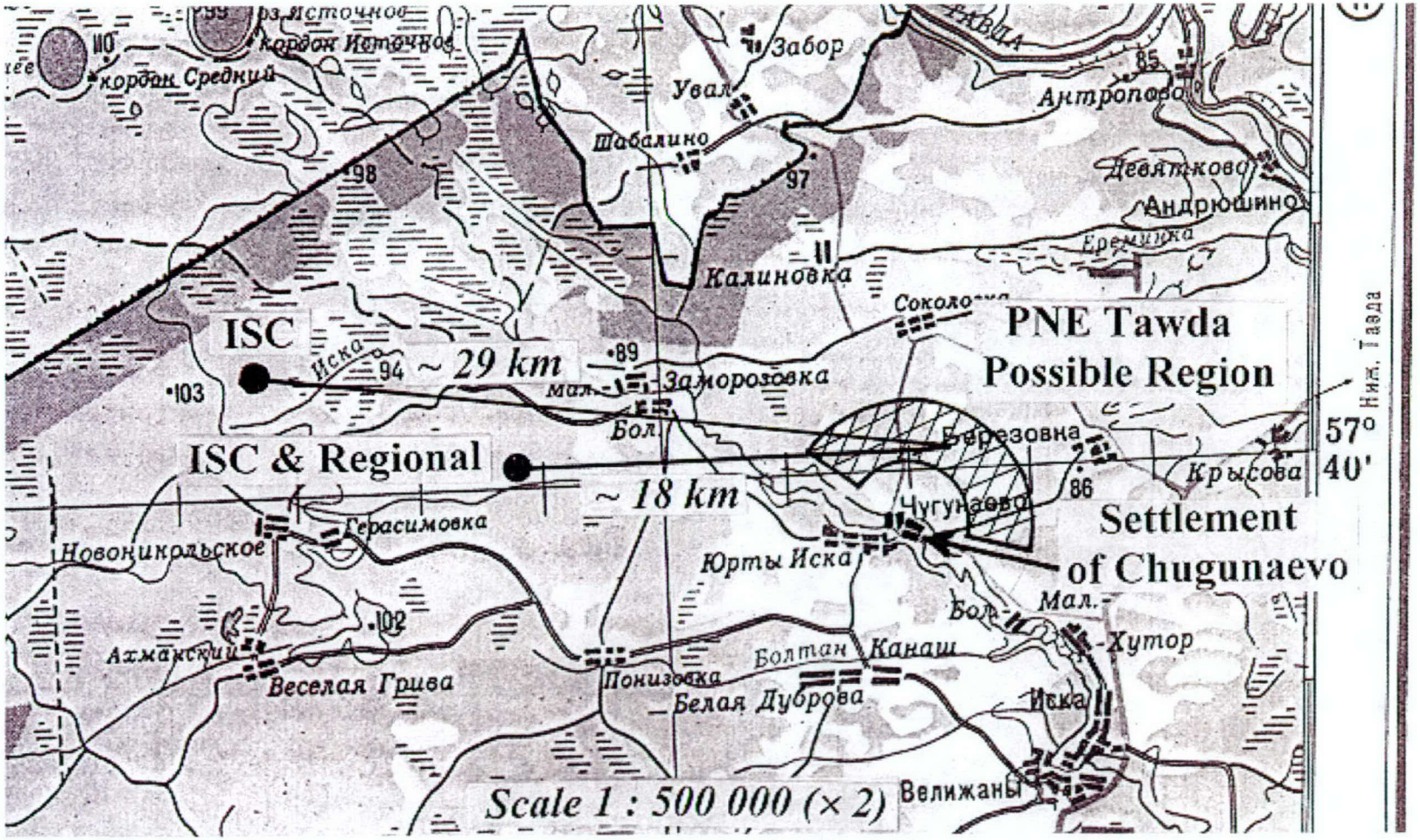


Figure 54. Locations for PNE Tawda.

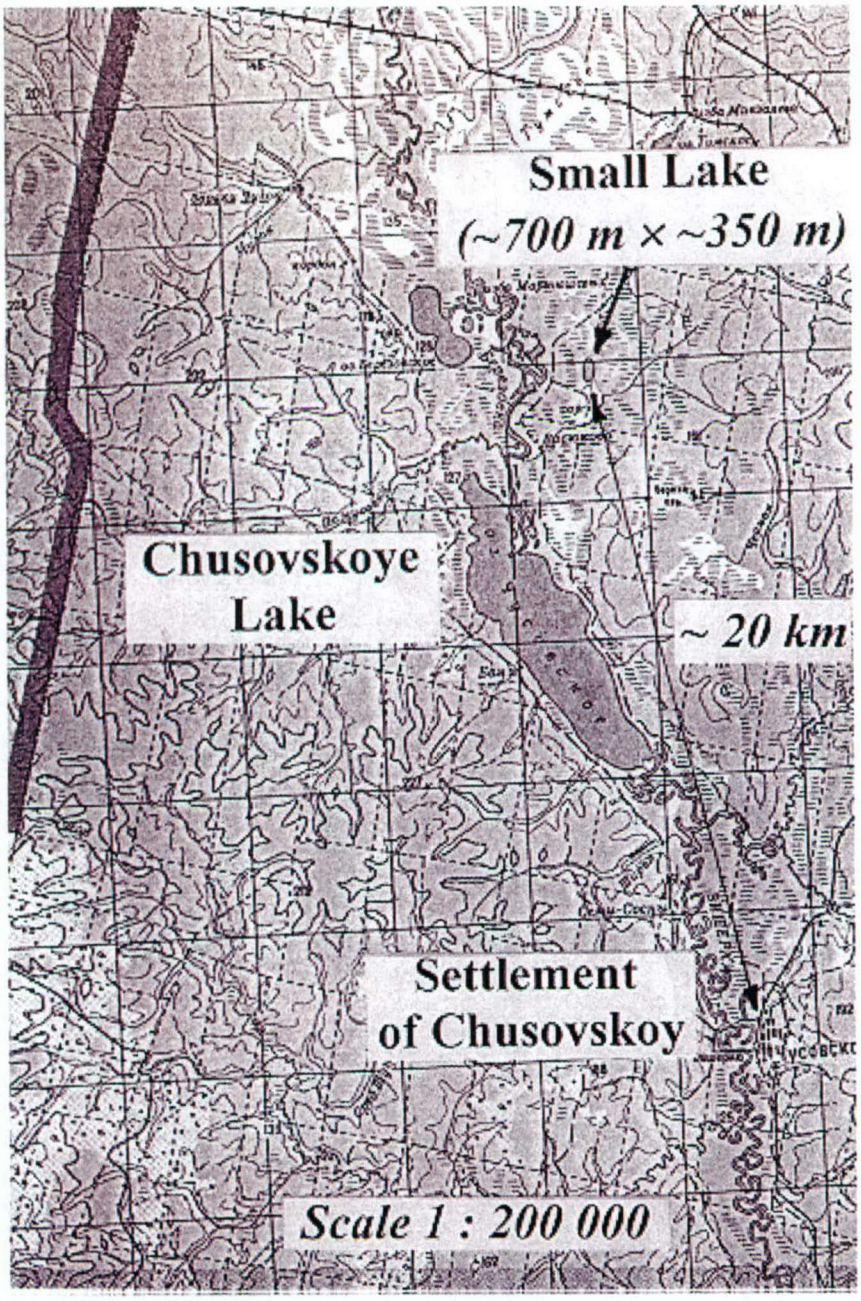


Figure 55. Locations in the vicinity of PNE Taiga.

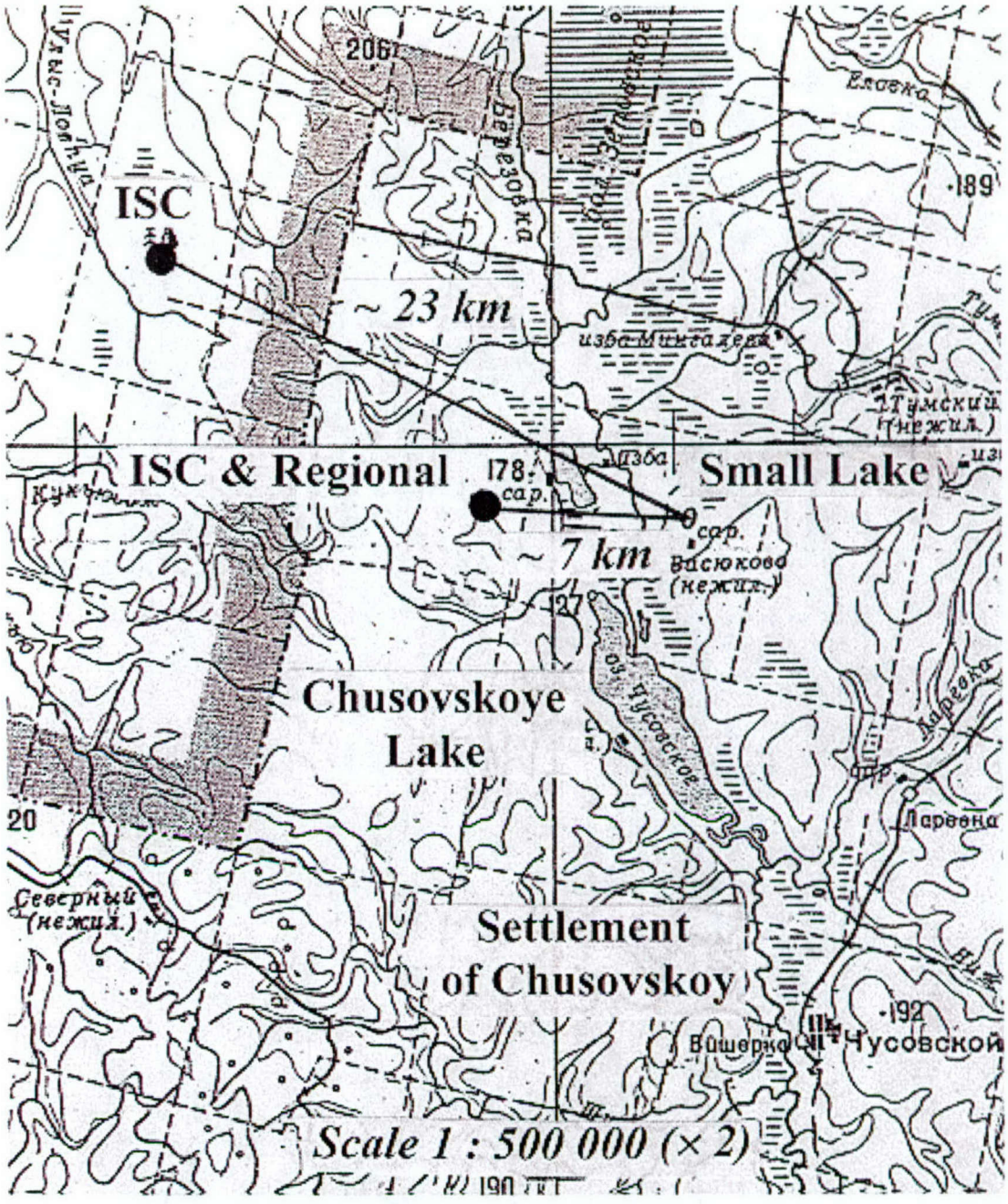


Figure 56. Locations for PNE Taiga.

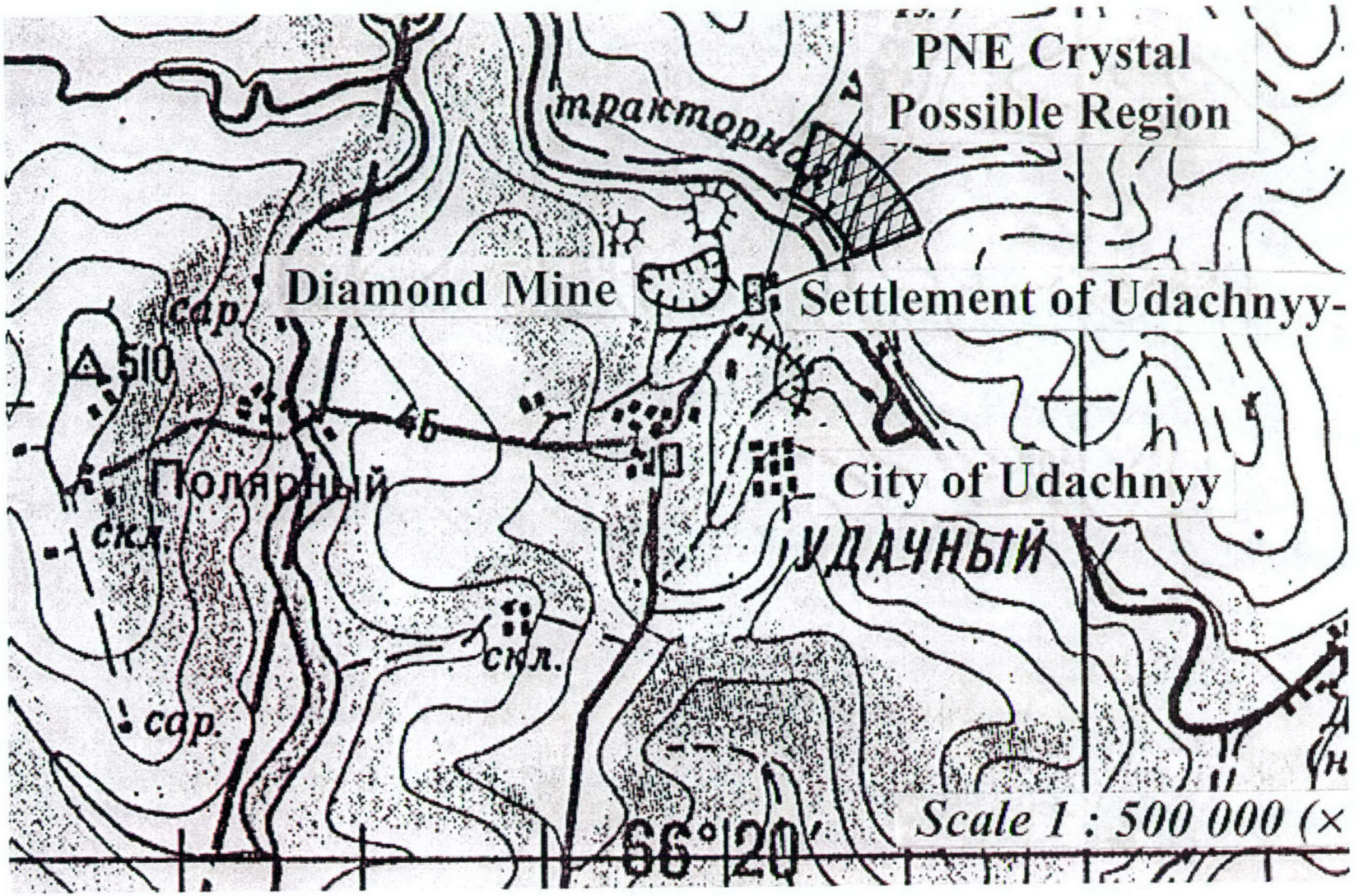


Figure 57. Locations in the Vicinity of PNE Crystal.

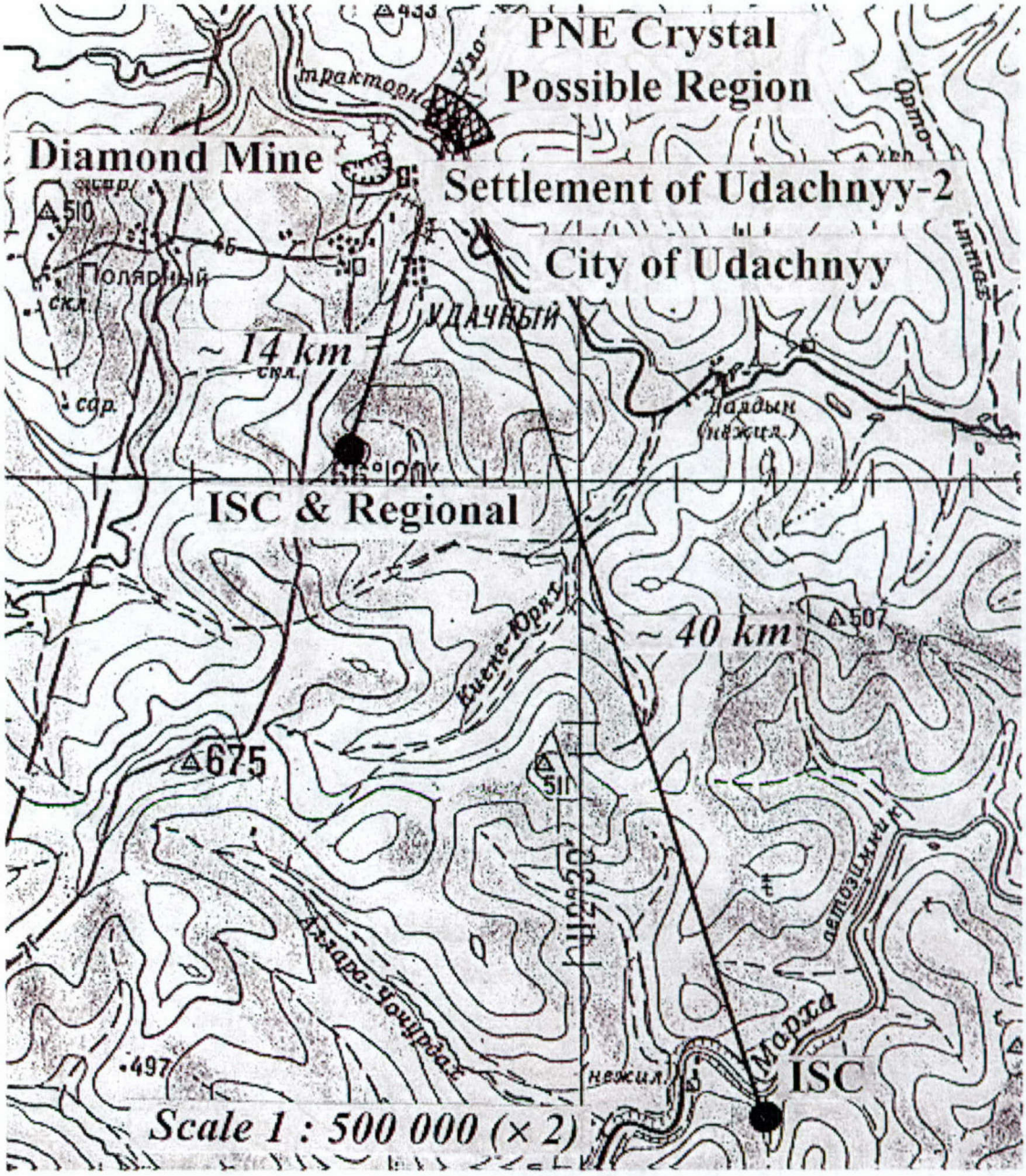


Figure 58. Locations for PNE Crystal.

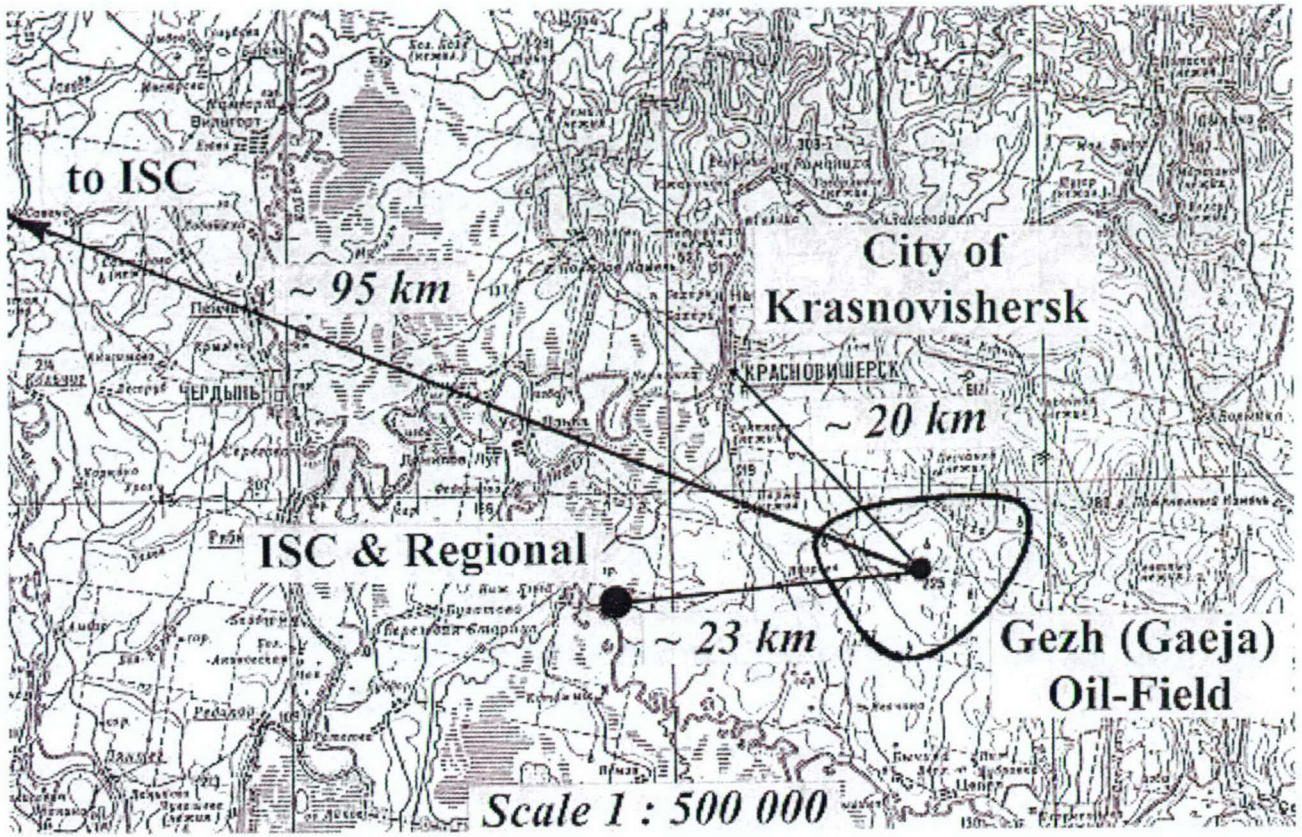


Figure 59. Locations for PNE Helium-1.

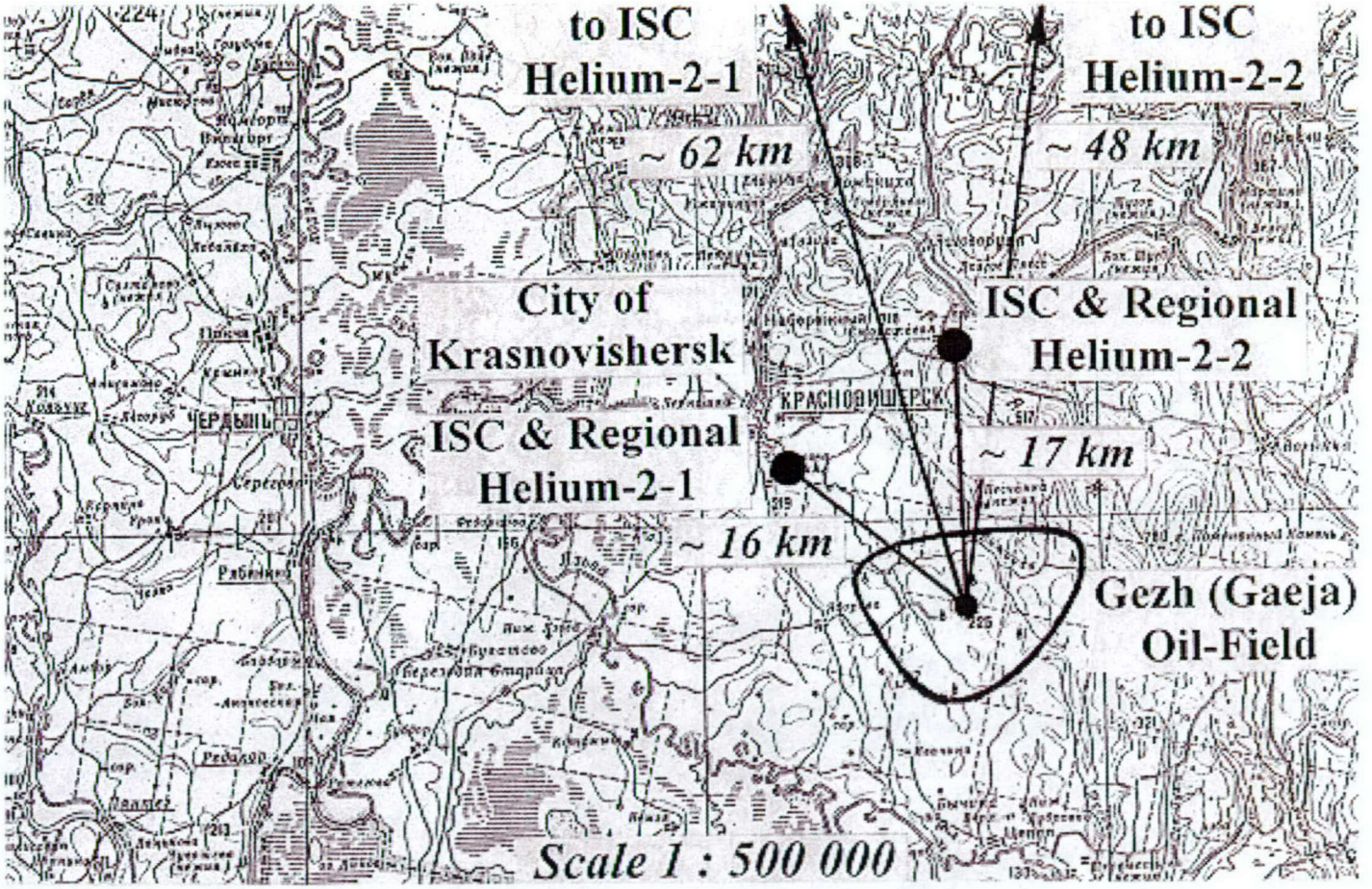


Figure 60. Locations for PNEs Helium-2-1 and Helium-2-2.

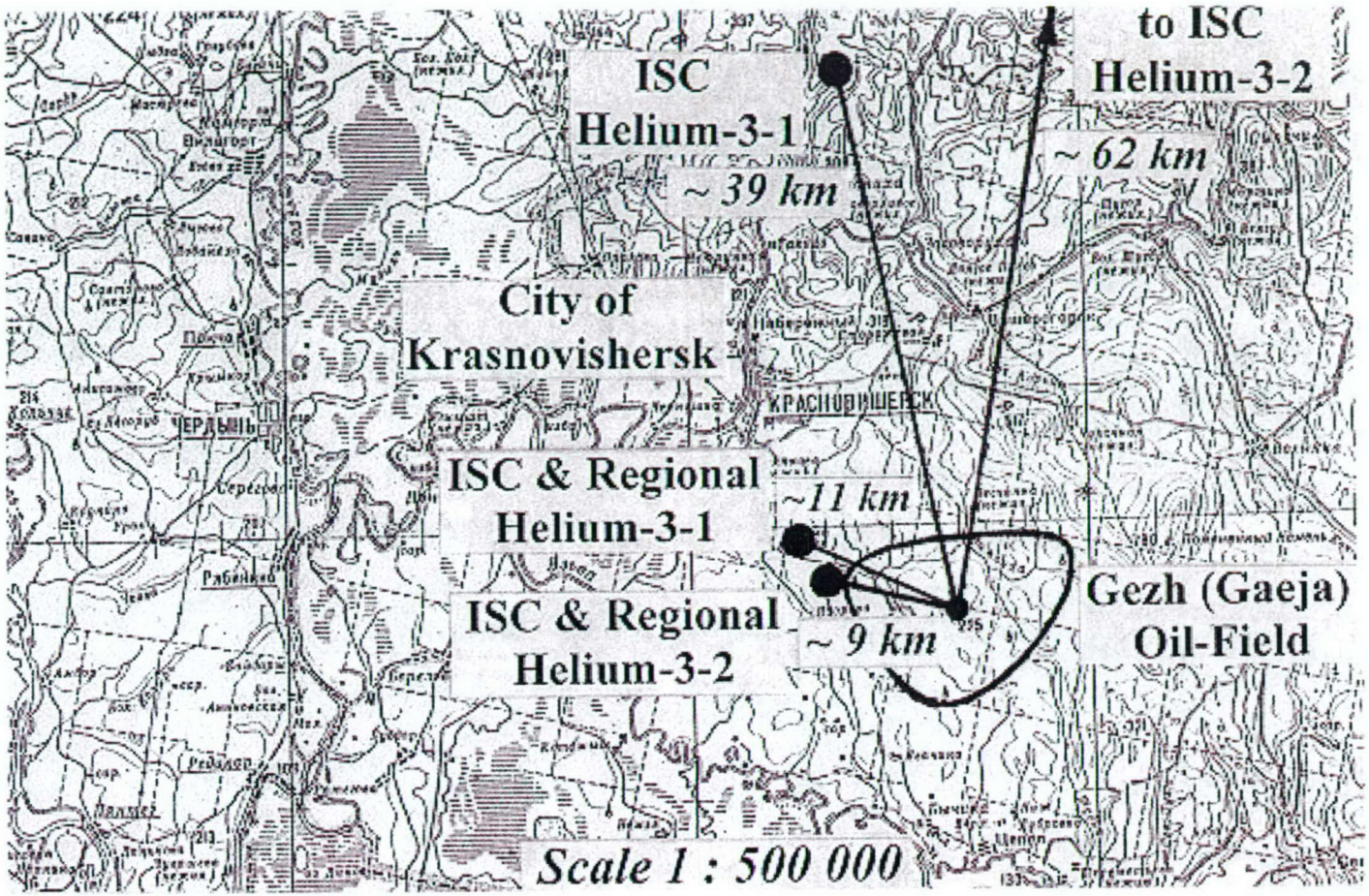


Figure 61. Locations for PNEs Helium-3-1 and Helium-3-2.

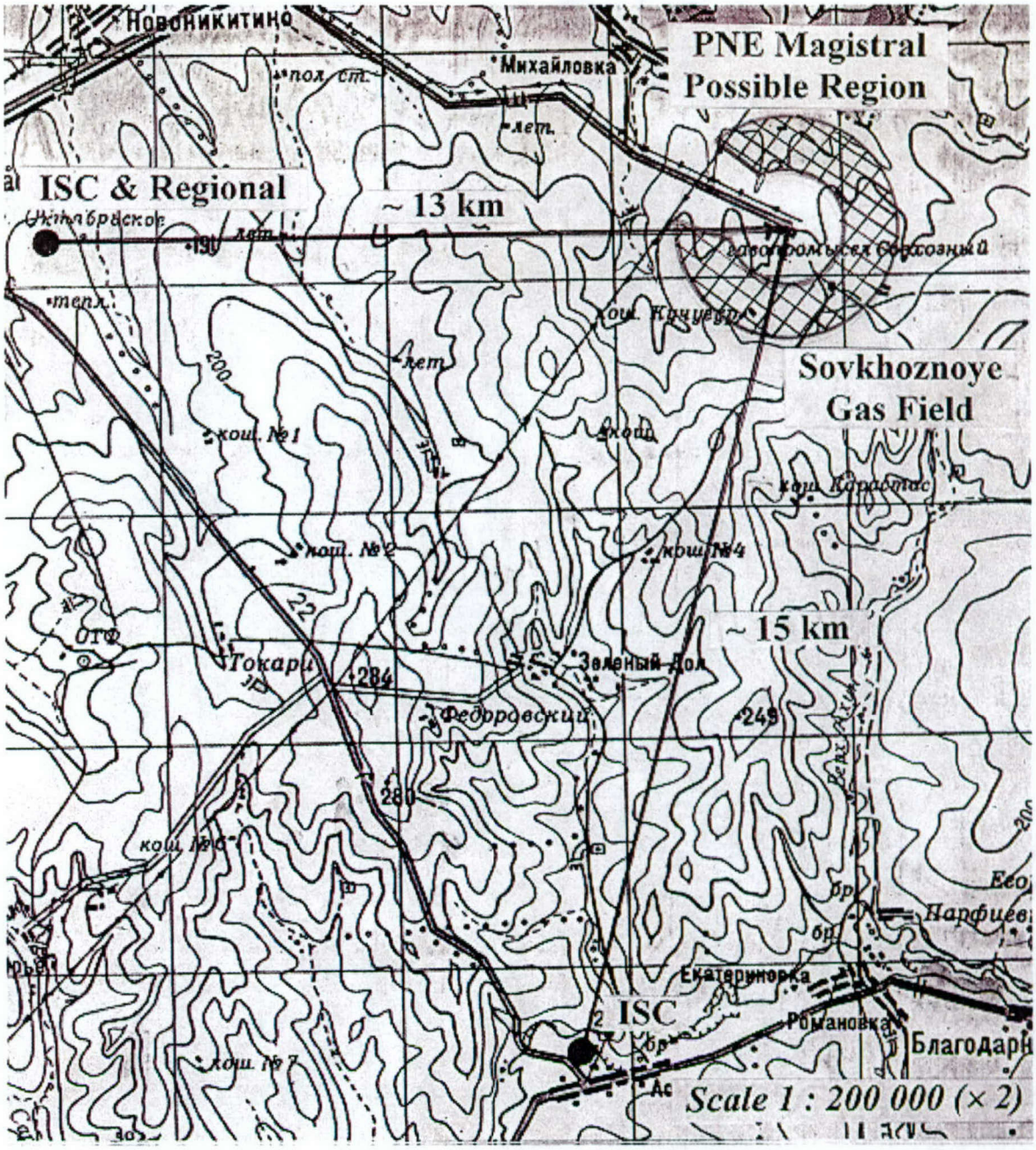


Figure 62. Locations for PNE Magistral.

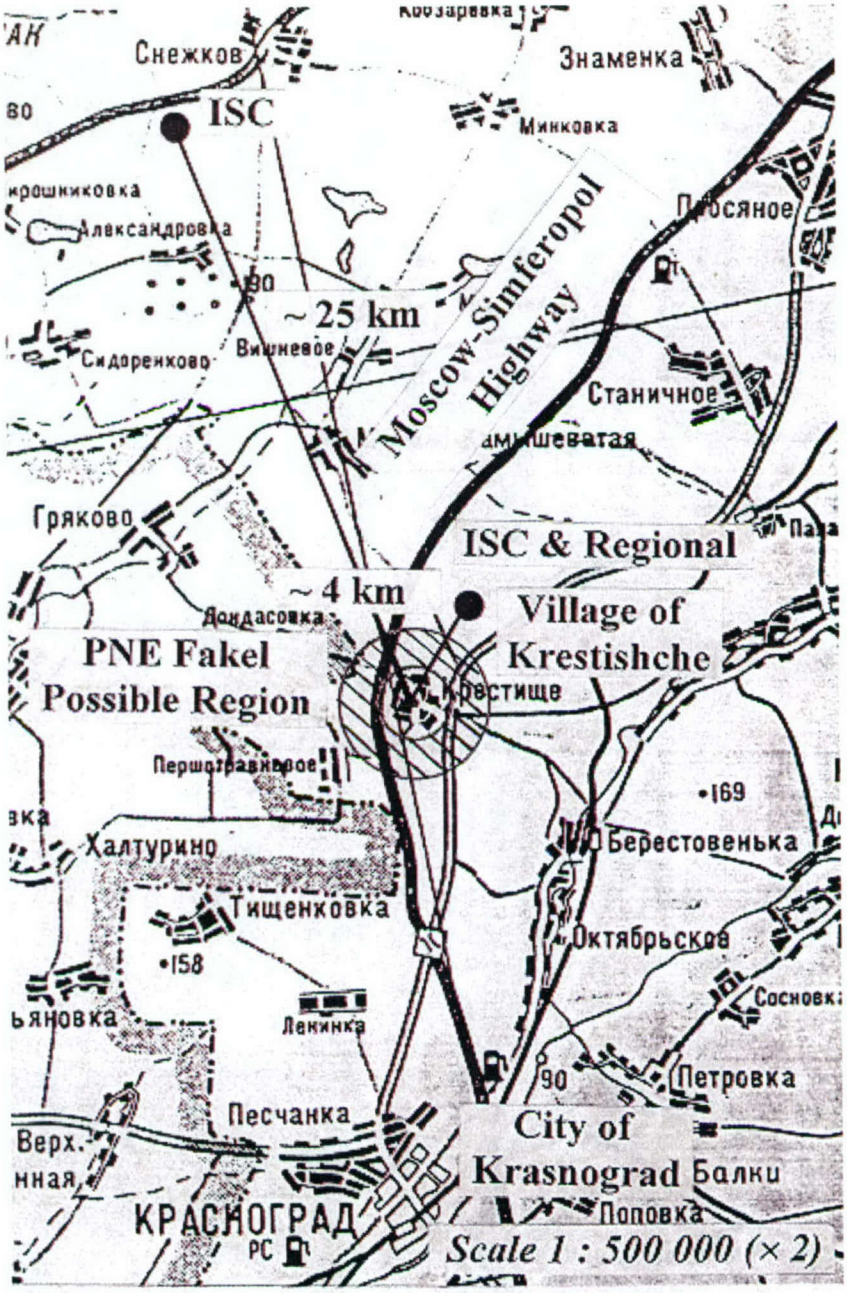


Figure 63. Locations for PNE Fakel.

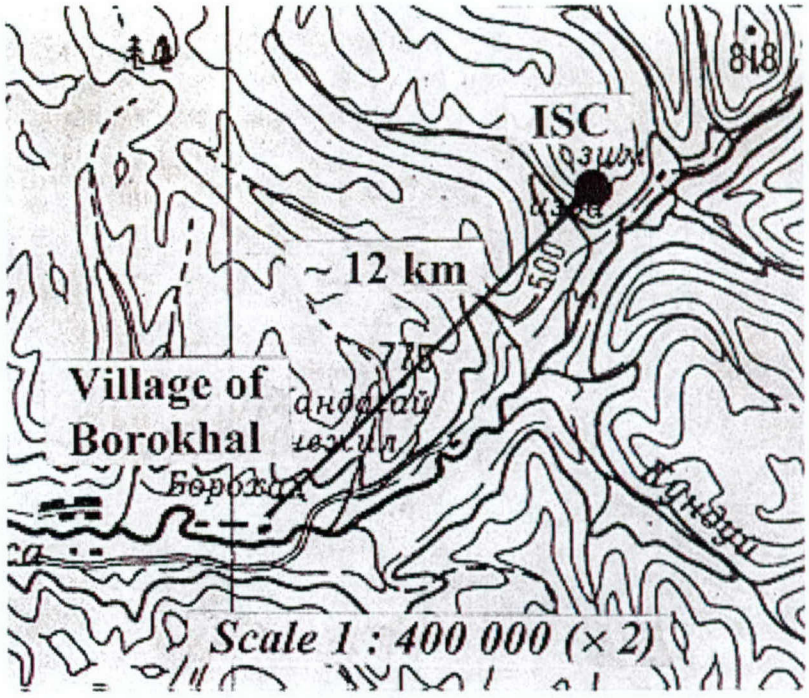


Figure 64. Locations for PNE Rift-3.

7.4 DISCREPANCIES IN ORIGIN TIMES FOR SOME PNE.

The paper of Sultanov *et. al.*, 1999, contains ground truth data on origin times for 97 explosions listed with a precision of 0.01 seconds. Also, for an additional 17 PNEs seismologically estimated origin times are listed with a precision of 0.5 seconds. This precision estimate is based "on a statistical comparison of ISC origin times and actual detonation times for 67 well-recorded PNE events for which the detonation times were automatically measured in the field". It was found that "the ISC seismic origin times for these events are early, on average, by 2.5 seconds, with an associated standard deviation of 0.38 seconds." Thus, the origin times for these additional 17 PNEs (listed in Table 1 of the paper of Sultanov *et. al.*, 1999) "were obtained by adding 2.5 seconds to their reported ISC origin times and are assured to be accurate to within about _0.5 seconds".

In the process of our review we found that the authors of the aforementioned paper did not carefully follow the rule they had developed. Table 39 supports this conclusion. As it is seen for the PNEs Urtabulak, Tawda, Azgir A-2-1, Sapphire and Neva 2-3 the discrepancies (between origin times listed in the paper and those which were re-estimated according to the referenced rule) are as minimum two times larger than the value of the referenced standard deviation (0.38 sec). It seems that clarifications of the data on origin times in Table 1 of the paper of Sultanov *et. al.*, 1999, should be made.

Table 39. Discrepancies of PNEs Origin Times Based on ISC Data.

No.	Name and Date (mm/dd/yy)	Origin Time (hh-mm-ss)			Discrepancy, sec
		Sultanov et. al., 1999	ISC	ISC corrected (by adding 2.5 sec and rounding)	
1	Urtabulak, 09/30/66	05-59-51.0	05-59-52.8	05-59-55.5	+4.5
2	Tawda, 10/06/67	06-59-57.5	07-00-02.5	07-00-05.0	+7.5
3	Azgir A-2-1, 07/01/68	04-02-00.5	04-02-00.9	04-02-03.5	+3.0
4	Magistral, 06/25/70	04-59-55.5	04-59-52.4 ⌐)	04-59-55.0	-0.5
5	Sapphire-1, 10/22/71	05-00-01.0	05-00-00.7	05-00-03.0	+2.0
6	Azgir-A-3-1, 12/22/71	06-59-59.0	06-59-56.5	06-59-59.0	0.0
7	Kama-2, 10/26/73	05-59-59.5	05-59-57.2	05-59-59.5	0.0
8	Lazurite, 12/07/74	05-59-59.0	05-59-56.9	05-59-59.5	+0.5
9	Azgir A-4, 07/29/76	05-00-00.5	04-59-58.0	05-00-00.5	0.0
10	Vyatka, 10/08/78	00-00-00.0	23-59-57.0	23-59-59.5	-0.5
11	Azgir-A-9, 12/18/78	07-59-58.5	07-59-56.3	07-59-59.0	+0.5
12	Azgir-A-8, 01/17/79	07-59-58.5	07-59-55.8	07-59-58.5	0.0
13	Azgir-A-11, 07/14/79	04-59-58.0	04-59-55.2	04-59-57.5	-0.5
14	Azgir-A-10, 10/24/79	05-59-59.0	05-59-56.7	05-59-56.7	0.0
15	Neva 2-1, 07/07/87	00-00-00.0	23-59-56.9	23-59-59.5	-0.5
16	Neva 2-2, 07/24/87	02-00-00.0	01-59-56.9	01-59-56.9	-0.5
17	Neva 2-3, 08/12/87	01-30-00.5	01-29-57.1	01-29-59.5	-1.0

Note: For Magistral PNE only USCGS data on origin time is available.

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APPENDIX A
ABBREVIATED SEISMIC BULLETINS

A1. INTRODUCTION

Appendix A contains abbreviated seismic bulletins (to be used mainly for regional location calibration studies) for 77 peaceful nuclear explosions (PNEs) conducted in the former USSR.

Data on travel (arrival) times was provided by the Geophysical Survey (GS) of the Russian Academy of Sciences (RAS), Complex Seismological Expedition (CSE) of the Joint Institute of Physics of the Earth of the RAS and Russian representative office of the Western Services Corporation (WSC). Appropriate data on travel times from bulletins of the International Seismological Center was also included. Final compilation of seismic bulletins was made at the WSC's representative office in Moscow.

Data on origin times and locations for PNEs conducted in the former USSR is taken from the paper of Sultanov *et al.,* 1999. Data on origin time and location of the first peaceful nuclear explosion in the former USSR (January 15, 1965; hole 1004) is taken from the paper of Bocharov *et al.,* 1989. The locations for PNEs Butane (30 March 1965, 10 June 1965, 16 June 1980 and 25 June 1980), Dnepr-1 (4 September 1972) and Dnepr-2 (27 August 1984), Tawda (6 October 1967), Magistral (25 June 1970), Taiga (23 March 1971), Fakel (9 July 1972) and Heliums (2 September 1981, 28 August 1984, 19 April 1987) as presented in the paper of Sultanov *et al.,* 1999, are subjects of large (greater than 10 km) errors. Due to this fact data on locations for these PNEs are marked by the sign **(?)**.

International codes of seismic stations are used, if available. For stations of the GS RAS and CSE without international codes unique codes were applied. Codes of CSE's stations have the sign "**&**" at the end. Bulletins contain the following station's information: coordinates, distance to source (up to 3000 km), travel times for Pn/P, Pg, Sn/S and Lg phases. The column "Network" contains data on seismological service: GS – Geophysical Survey of the RAS, CSE – Complex Seismological Expedition and ISC – International Seismological Center. The column "Source" contains information on travel times data sources as follows: "record" – measurements on seismic records in this project and "bulletin" – taken from available bulletins.

Content

No.	Date (mm/dd/yy)	Page
1	01/15/65	A-5
2	03/30/65	A-8
3	06/10/65	A-9
4	04/22/66	A-10
5	09/30/66	A-13
6	10/06/67	A-17
7	05/21/68	A-20
8	07/01/68	A-24
9	09/02/69	A-29
10	09/08/69	A-33
11	09/26/69	A-37
12	12/06/69	A-43
13	06/25/70	A-48
14	12/12/70	A-51
15	12/23/70	A-55
16	03/23/71	A-59
17	07/02/71	A-63
18	07/10/71	A-65
19	09/19/71	A-68
20	10/04/71	A-70
21	10/22/71	A-72
22	12/22/71	A-76
23	04/11/72	A-80
24	07/09/72	A-82
25	08/20/72	A-85
26	09/04/72	A-89
27	09/21/72	A-91
28	10/03/72	A-94
29	11/24/72	A-100
30	11/24/72	A-102
31	08/15/73	A-105

No.	Date (mm/dd/yy)	Page
32	08/28/73	A-107
33	09/19/73	A-109
34	09/30/73	A-112
35	10/26/73	A-116
36	07/08/74	A-119
37	07/29/76	A-121
38	09/30/77	A-126
39	10/17/78	A-129
40	12/18/78	A-135
41	01/17/79	A-142
42	07/14/79	A-148
43	10/24/79	A-155
44	06/16/80	A-162
45	06/25/80	A-163
46	10/08/80	A-164
47	05/25/81	A-169
48	09/02/81	A-173
49	09/26/81	A-175
50	09/26/81	A-180
51	10/16/82	A-184
52	10/16/82	A-189
53	10/16/82	A-194
54	10/16/82	A-199
55	07/10/83	A-204
56	07/10/83	A-209
57	07/10/83	A-214
58	09/24/83	A-219
59	09/24/83	A-224
60	09/24/83	A-229
61	09/24/83	A-233
62	09/24/83	A-238
63	09/24/83	A-243

No.	Date (mm/dd/yy)	Page
64	07/21/84	A-248
65	07/21/84	A-254
66	07/21/84	A-260
67	08/11/84	A-266
68	08/27/84	A-271
69	08/28/84	A-274
70	08/28/84	A-276
71	10/27/84	A-278
72	10/27/84	A-283
73	07/18/85	A-287
74	04/19/87	A-294
75	04/19/87	A-296
76	10/03/87	A-298
77	09/06/88	A-303

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/15/65	06:00:00.79	49.9350	79.0094

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KZAG&	45.375	78.733	506.9	70.5		83.6	122.5		142.3	CSE	record
ILI&	43.900	77.122	685.3	91.9		111.8	163.9		191.8	CSE	record
CHL	43.527	78.374	713.2	95.0						GS	bulletin
CHI2&	43.438	78.413	722.9	95.0		116.9	169.0		203.1	CSE	record
AAA	43.267	76.950	756.9	100.8					221.8	GS	bulletin
NARY&	43.050	80.271	770.6	102.5		123.0	184.5		214.6	CSE	record
KRM	42.987	78.275	773.5	102.4					223.4	GS	bulletin
KRM&	42.980	78.270	774.3	102.9		123.3	185.0		215.2	CSE	record
FABK&	43.130	76.430	780.9	103.5		125.7	186.6		221.6	CSE	record
TASH&	52.733	89.933	820.8	110.0		137.8	193.9		224.1	CSE	record
PRZ	42.480	78.400	829.0	110.8					234.8	GS	bulletin
SHEK&	51.174	90.698	838.1	112.3			196.0		235.2	CSE	record
BOMR&	42.500	75.930	858.7	113.3		145.0	205.5		249.9	CSE	record
JOI&	52.767	91.317	911.3	120.8		146.9	213.0		257.1	CSE	record
CHAD&	51.374	91.823	918.2	121.3		149.1	214.3		260.9	CSE	record
KHAN&	50.721	92.248	944.6	124.7		152.6	216.5		266.6	CSE	record
NRN	41.430	76.000	972.6	129.2						GS	bulletin
NRN&	41.420	75.800	977.5	128.6		160.9	226.7		276.4	CSE	record
KHAI&	51.572	93.065	1006.0	132.4		162.9			278.4	CSE	record
VUSI&	52.217	93.000	1010.2	133.8		166.5			283.7	CSE	record
CHER&	53.139	92.926	1026.4	143.2					289.5	CSE	record
CHM	42.319	69.603	1112.8	149.2			251.2		321.2	GS	bulletin
ANR	40.750	72.370	1143.3	148.2					330.2	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/15/65	06:00:00.79	49.9350	79.0094

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NAM	41.000	71.660	1144.7	155.2			267.2			GS	bulletin
FRG	40.370	71.780	1202.7	155.2					343.7	GS	bulletin
TAS	41.340	69.310	1214.9	178.2				294.2	348.2	GS	bulletin
GAR	39.000	70.320	1394.2	181.2					396.7	GS	bulletin
SVE	56.827	60.637	1435.4	182.8			319.2			GS	bulletin
SVE	56.827	60.637	1435.4	193.1			321.2	347.2		GS	record
KHO	37.480	71.530	1505.6	193.2				366.1		GS	bulletin
KUL	37.900	69.780	1524.3	201.2						GS	bulletin
MOY	51.670	101.000	1554.9	201.8					447.2	GS	bulletin
MOY	51.670	101.000	1554.9	212.7				381.3	446.3	GS	record
ARS	51.920	102.430	1652.7	220.0					463.5	GS	record
ZAK	50.383	103.283	1726.1	226.2			388.4		494.4	GS	record
IRK	52.242	104.270	1777.6		231.2		415.2			GS	bulletin
WRS	34.150	71.400	1858.1	240.5	231.2					ISC	bulletin
TIG	52.770	106.330	1915.7	243.9					539.5	GS	record
KAB	52.050	106.650	1941.3	245.0			451.2			GS	bulletin
KYA	50.370	106.450	1948.9	257.2	248.5		451.8		545.2	GS	bulletin
LAH	31.550	74.333	2075.4	261.2						ISC	bulletin
ASH	37.950	58.350	2112.0	263.4			464.2			GS	bulletin
BGZ	53.620	109.630	2133.7	265.7				483.2	613.0	GS	record
NIZ	55.770	109.550	2135.8	268.2				483.2	603.2	GS	record
KAT	39.028	56.270	2161.1	271.9	271.2			491.2		GS	bulletin
ALL	54.680	110.810	2210.0						645.8	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/15/65	06:00:00.79	49.9350	79.0094

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	2224.6		273.2		495.4		652.2	GS	record
NDI	28.683	77.217	2360.7		286.8		522.2			ISC	bulletin
UKT	55.480	113.620	2390.2		289.5				678.3	GS	record
QUE	30.188	66.950	2411.3		291.4					ISC	bulletin
BOD	57.850	114.183	2439.3		293.2			535.3	701.7	GS	record
BOD	57.850	114.183	2439.3		293.3					GS	bulletin
MAK	42.961	47.505	2517.5		303.2					GS	bulletin
NLT	56.500	115.700	2521.6		302.5					GS	record
SHE	40.646	48.642	2570.5		307.2					GS	bulletin
SKL	55.870	117.380	2626.2		312.5					GS	record
CHA	26.833	87.167	2653.6		315.2			574.2		ISC	bulletin
CAA	56.900	118.270	2679.4		317.2			584.5		GS	record
KRV	40.647	46.319	2734.1		321.2					GS	bulletin
TI2	41.730	44.750	2782.0		325.2					GS	bulletin
TUP	54.430	119.900	2798.0		326.8				804.2	GS	record
GRS	39.500	46.330	2804.8		329.2					GS	bulletin
GOR	41.980	44.130	2812.2		328.2					GS	bulletin
MOS	55.738	37.625	2815.5		327.2					GS	bulletin
BKR	41.733	43.517	2869.9		335.0					GS	bulletin
AKH	41.410	43.480	2891.0		336.2					GS	bulletin
ERE	40.170	44.470	2894.1		335.1					GS	bulletin
SHL	25.567	91.883	2918.7		335.2					ISC	bulletin
BOK	23.795	85.886	2957.2		340.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/30/65	08:00:00	52.9 (?)	56.5 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	511.0	72.5		85.0	127.0		148.5	GS	record
MHV	54.950	37.770	1246.6	155.8		204.0	272.8		340.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/10/65	07:00:00	52.9 (?)	56.5 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	511.0	73.0		87.0	130.5		157.0	GS	record
MHV	54.950	37.770	1246.6	155.5		196.4	272.0		331.0	GS	record
KRV	40.647	46.319	1563.2	197.0						GS	record
VAN	37.948	58.108	1664.4	216.0			371.5			GS	record
VYB	60.720	28.800	1882.3	228.5						GS	bulletin
ELT	53.253	86.277	1980.2		255.0					GS	record
CUR	50.097	88.352	2213.4		280.0					GS	record
BOD	57.850	114.183	3582.5		402.3					GS	record
VLA	43.120	131.893	5458.5		511.0					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/22/66	02:58:00.26	47.829	47.935

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GOR	41.980	44.130	715.0			114.7				GS	bulletin
BKR	41.733	43.517	761.1	102.5						GS	bulletin
ABS	41.750	42.810	786.6	104.7						GS	bulletin
SOC	43.583	39.720	793.3	106.7						GS	bulletin
AKH	41.410	43.480	794.8	106.7						GS	bulletin
KRV	40.647	46.319	807.4	106.7						GS	bulletin
STE	41.000	44.370	809.0	108.1						GS	bulletin
GRS	39.500	46.330	933.1	123.7						GS	bulletin
MHV	54.950	37.770	1059.2	136.7		174.7			305.7	GS	record
ALU	44.682	34.403	1097.5	142.0						GS	bulletin
YAL	44.487	34.155	1124.2	144.7						GS	bulletin
SVE	56.827	60.637	1318.5	166.7						GS	bulletin
KAS	41.372	33.767	1329.5	171.7						ISC	bulletin
RAK	48.055	24.198	1764.8	219.2						GS	bulletin
MZG	48.514	23.514	1808.5	237.4						GS	bulletin
KSA	33.823	35.890	1850.2		238.7					ISC	bulletin
TERS&	41.520	71.130	1956.7	244.2						CSE	record
ARKI&	41.770	71.970	2005.1	250.9						CSE	record
UZUN&	41.970	72.520	2035.4	255.9						CSE	record
RYAZ&	41.470	72.280	2043.5	256.0						CSE	record
NUR	60.509	24.651	2052.8	251.2			445.7			ISC	bulletin
KARA&	41.620	72.580	2057.7	259.3						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/22/66	02:58:00.26	47.829	47.935

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
JER	31.772	35.197	2080.7		260.7					ISC	bulletin
KZUR&	41.430	73.280	2119.1	262.4						CSE	record
KAZA&	41.450	73.970	2168.9	267.7						CSE	record
KRS&	43.280	75.170	2171.1	268.4						CSE	record
KJN	64.085	27.712	2184.8	267.7			477.7			ISC	bulletin
ILI&	43.900	77.122	2291.2		280.5					CSE	record
TLG&	43.238	77.225	2326.5		285.1					CSE	record
APA	67.558	33.442	2345.9	283.7						GS	bulletin
KZAG&	45.375	78.733	2357.1		288.9					CSE	record
UPP	59.858	17.627	2368.1	286.9						ISC	bulletin
KLS	56.165	15.592	2377.7	287.4						ISC	bulletin
CHI2&	43.438	78.413	2406.8		292.1					CSE	record
KRM&	42.980	78.270	2415.9		292.9					CSE	record
PRU	49.988	14.542	2436.9		294.5					ISC	bulletin
UME	63.815	20.237	2447.1	293.8						ISC	bulletin
ORTO&	42.950	78.770	2454.6		297.0					CSE	record
CHAR&	43.496	79.217	2464.5		297.7					CSE	record
SOD	67.371	26.629	2491.3	298.2						ISC	bulletin
KHC	49.131	13.578	2519.9		303.1					ISC	bulletin
CLL	51.308	13.002	2529.4		303.7					ISC	bulletin
QUE	30.188	66.950	2540.5		305.3					ISC	bulletin
NARY&	43.050	80.271	2562.4		305.9					CSE	record
GOT	57.698	11.978	2622.0		311.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/22/66	02:58:00.26	47.829	47.935

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRK	69.724	30.063	2623.8		312.0					ISC	bulletin
KIR	67.840	20.417	2713.3		318.8					ISC	bulletin
LHN	61.049	10.880	2761.9		322.8					ISC	bulletin
SKA	63.580	12.280	2783.2		324.4					ISC	bulletin
TRO	69.632	18.928	2891.1		333.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/66	05:59:51.0	38.968	64.517

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SAM	39.660	66.950	223.1	35.0					65.0	GS	bulletin
DSH	38.570	68.760	370.8	54.5			98.5			GS	bulletin
KUL	37.900	69.750	471.2	70.0						ISC	bulletin
KUL	37.900	69.780	473.7	69.9						GS	bulletin
TAS	41.340	69.310	485.1	67.0		81.0	117.0			GS	record
GAR	39.000	70.317	501.7	70.0						ISC	bulletin
GAR	39.000	70.320	502.0	70.3						GS	bulletin
MSH	36.311	59.588	524.6	76.0						ISC	bulletin
ASH	37.950	58.350	549.0	74.0						GS	bulletin
ASH	37.950	58.350	549.0	74.0						ISC	bulletin
CHM	42.319	69.603	567.8	76.5		88.0	138.0		163.0	GS	bulletin
VAN	37.950	58.100	570.3	75.0						ISC	bulletin
DZT	39.220	71.220	579.5	80.0						GS	bulletin
TERS&	41.520	71.130	628.8	84.0		102.2	150.2		176.7	CSE	record
KHO	37.480	71.530	634.7	86.1			147.6		175.1	GS	bulletin
KHO	37.483	71.533	634.9	86.0				148.0		ISC	bulletin
FRG	40.383	71.783	641.7	86.5				154.0		ISC	bulletin
NAM	41.000	71.660	649.3	87.3						GS	bulletin
KZDZ&	41.250	71.980	683.6	90.9		111.1	161.1		191.2	CSE	record
ANR	40.755	72.360	698.5	93.0						ISC	bulletin
ARKI&	41.770	71.970	704.0	92.8		114.7	164.5		192.8	CSE	record
KAT	39.028	56.270	713.1	94.0						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/66	05:59:51.0	38.968	64.517

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RYAZ&	41.470	72.280	715.4	94.5		116.8	170.8		203.2	CSE	record
KARA&	41.620	72.580	744.7	99.1		121.6	177.7		211.4	CSE	record
UZUN&	41.970	72.520	754.6	99.6		121.8	178.1		211.6	CSE	record
KARK&	41.630	72.730	756.7	99.9		122.0	179.0		211.6	CSE	record
KZUR&	41.430	73.280	793.0	105.2		129.2	185.8		223.3	CSE	record
WRS	34.150	71.400	814.0	108.2						ISC	bulletin
MUR	38.370	73.930	820.2	110.5						GS	bulletin
KAZA&	41.450	73.970	848.8	111.0		139.4	197.5		239.2	CSE	record
FRU	42.830	74.620	951.0	125.0						GS	bulletin
NRN&	41.420	75.800	996.3	132.5		163.6	237.8		289.5	CSE	record
QUE	30.188	66.950	997.3	131.0						ISC	bulletin
NRN	41.430	76.000	1012.9	130.5		160.5	227.0		273.0	GS	record
BOMR&	42.500	75.930	1038.2	135.3		169.1	239.7		291.7	CSE	record
MNL	33.147	73.750	1050.4	138.0						ISC	bulletin
KRS	43.183	76.400	1100.0	142.7						GS	bulletin
AAA	43.267	76.950	1145.0	148.6					327.6	GS	bulletin
TLG&	43.238	77.225	1164.9	149.7			266.2		326.7	CSE	record
AAB	43.230	77.230	1164.9	149.5		185.0	268.0			GS	record
AAB	43.267	77.383	1178.0	150.0						ISC	bulletin
ILI&	43.900	77.122	1184.0	151.8			268.7		328.9	CSE	record
TEH	35.738	51.386	1214.1	157.0						ISC	bulletin
PRZ	42.480	78.400	1232.6	160.0						GS	bulletin
KRM&	42.980	78.270	1236.8	158.9			279.1		339.3	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/66	05:59:51.0	38.968	64.517

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRM	42.987	78.275	1237.4	158.9						GS	bulletin
CHI2&	43.438	78.413	1263.0	160.9			284.0		357.9	CSE	record
ORTO&	42.950	78.770	1275.0	164.6			284.1		358.3	CSE	record
CHAR&	43.496	79.217	1326.9	168.4			300.7		377.1	CSE	record
KZAG&	45.375	78.733	1368.6	175.2			309.7		381.4	CSE	record
NARY&	43.050	80.271	1396.1	178.3			316.8		385.7	CSE	record
SHI	29.644	52.526	1507.3	194.0						ISC	bulletin
KRV	40.650	46.333	1563.1	195.0						ISC	bulletin
KRV	40.647	46.319	1564.3	195.1						GS	bulletin
GRS	39.500	46.333	1566.1	196.0						ISC	bulletin
GRS	39.500	46.330	1566.3	196.0						GS	bulletin
NDI	28.683	77.217	1631.9	204.6						ISC	bulletin
GOR	41.980	44.130	1753.9	224.0						GS	bulletin
SEM	50.400	80.250	1771.1	220.8	228.2				489.9	GS	bulletin
SEM	50.400	80.250	1771.1	222.0	229.2		396.0		519.0	GS	record
SEM	50.408	80.250	1771.7	220.6						ISC	bulletin
BKR	41.733	43.517	1803.0	226.0	233.6					GS	bulletin
BKR	41.733	43.517	1803.0	226.0						ISC	bulletin
ZUG	42.400	41.800	1948.9	249.0						GS	bulletin
SVE	56.810	60.637	2002.0	248.0						ISC	bulletin
SVE	56.827	60.637	2003.9	248.0						GS	bulletin
KPR	43.400	40.120	2094.1	261.5	264.5					GS	record
KPR	43.400	40.120	2094.1		262.0					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/66	05:59:51.0	38.968	64.517

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CUR	50.097	88.352	2244.3		275.1			509.3		GS	bulletin
ELT	53.253	86.277	2293.3		280.2					GS	bulletin
POO	18.529	73.849	2433.2		293.7					ISC	bulletin
ALU	44.682	34.403	2561.6		306.0					GS	record
YAL	44.487	34.155	2579.9		307.0					GS	bulletin
YAL	44.487	34.155	2579.9		307.4					GS	record
SIM	44.950	34.117	2586.2		307.0					ISC	bulletin
SIM	44.949	34.116	2586.2		307.0					GS	bulletin
SIM	44.949	34.116	2586.2		308.3					GS	record
MHV	54.950	37.770	2669.5		315.8					GS	record
MOS	55.738	37.625	2722.8		320.0					GS	bulletin
MOS	55.738	37.625	2722.8		320.0					ISC	bulletin
OBN	55.115	36.568	2745.2		323.0					GS	bulletin
OBN	55.115	36.568	2745.2		323.0			583.5		GS	record
JER	31.772	35.197	2763.0		326.0					ISC	bulletin
SHL	25.567	91.883	2953.0		338.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/06/67	06:59:57.5	57.70 (?)	65.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRV	53.083	70.250	604.8	81.0						GS	bulletin
SEM	50.400	80.250	1271.7	160.0						GS	bulletin
ELT	53.253	86.277	1413.9	178.8						GS	bulletin
ELT	53.253	86.277	1413.9	178.9		229.3				GS	record
UKGK&	49.833	82.283	1419.0	177.6			317.1		392.6	CSE	record
KZAG&	45.375	78.733	1653.9	207.9			369.6	392.2	464.0	CSE	record
MHV	54.950	37.770	1711.2	218.0			378.5	404.3	486.5	GS	record
ILI&	43.900	77.122	1742.8	217.4			400.8	419.3	502.6	CSE	record
ILI	43.860	77.032	1743.9	217.4						GS	bulletin
KRS&	43.280	75.170	1747.3	224.8	237.4		404.0	419.6	503.8	CSE	record
OBN	55.115	36.568	1776.2	225.0			392.0	413.5	512.5	GS	record
OBN	55.115	36.568	1776.2	225.5						GS	bulletin
KRS	43.183	76.400	1793.2	224.8						GS	bulletin
TLG&	43.238	77.225	1813.4	227.0	241.2			423.6	512.4	CSE	record
AAB	43.230	77.230	1814.4	227.0					499.5	GS	bulletin
CHI2&	43.438	78.413	1833.1	230.0	241.6			425.9	520.3	CSE	record
BOMR&	42.500	75.930	1849.9	231.0	243.3			427.5	524.6	CSE	record
KRM	42.987	78.275	1873.7	234.1						GS	bulletin
KRM&	42.980	78.270	1874.2	231.4	243.4			427.5	525.2	CSE	record
RYB	42.280	76.110	1878.0	238.5						GS	bulletin
APA	67.558	33.442	1931.1	244.0						GS	bulletin
NRN&	41.420	75.800	1959.1	245.7						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/06/67	06:59:57.5	57.70 (?)	65.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRN	41.430	76.000	1963.5	245.7						GS	bulletin
UER	51.563	94.087	1967.2	244.7						GS	bulletin
UER	51.563	94.087	1967.2	244.7			430.7		550.7	GS	record
GAR	39.000	70.320	2110.1	263.8						GS	bulletin
KJN	64.085	27.712	2118.6	263.4			469.5			ISC	bulletin
OUL	65.085	25.896	2210.6		273.3					ISC	bulletin
KUL	37.900	69.780	2224.5	275.8						GS	bulletin
KEV	69.755	27.007	2255.7				497.5			ISC	bulletin
KEV	69.755	27.007	2255.7		279.8					ISC	bulletin
DUS	42.080	44.700	2257.2		279.7					GS	bulletin
NUR	60.509	24.651	2305.9		275.5					ISC	bulletin
KRV	40.647	46.319	2324.1		286.3					GS	bulletin
BKR	41.733	43.517	2343.0		288.5					GS	bulletin
MOY	51.670	101.000	2371.7		287.5					GS	bulletin
ABS	41.750	42.810	2374.1		290.5					GS	bulletin
KIR	67.840	20.417	2476.5		300.3					ISC	bulletin
UME	63.815	20.237	2485.4		300.8					ISC	bulletin
TRO	69.632	18.928	2558.4		309.5					ISC	bulletin
UPP	59.858	17.627	2701.6		321.6					ISC	bulletin
KAS	41.372	33.767	2864.4		336.5					ISC	bulletin
SKA	63.580	12.280	2878.3		336.5					ISC	bulletin
RAK	48.055	24.198	2905.5		336.0					GS	bulletin
UDD	60.090	13.607	2909.0		337.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/06/67	06:59:57.5	57.70 (?)	65.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MZG	48.514	23.514	2915.8		339.8					GS	bulletin
KLS	56.165	15.592	2956.0		341.7					ISC	bulletin
UZH	48.631	22.293	2961.7		344.9					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/21/68	03:59:11.98	38.918	65.032

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SAM	39.660	66.950	184.6	31.0					51.0	GS	bulletin
DSH	38.570	68.760	325.9	48.6		53.0	81.6		95.6	GS	record
OBG	38.720	69.720	407.1	58.6		70.0	91.5			GS	record
KUL	37.900	69.780	429.1	61.5		70.7	103.7			GS	bulletin
TAS	41.340	69.310	452.3	63.6			111.0		132.0	GS	record
TAS	41.340	69.310	452.3	63.0						GS	bulletin
CHM	42.319	69.603	539.6	72.8		83.0			159.0	GS	record
MSH	36.311	59.588	560.0	76.0						ISC	bulletin
KHO	37.480	71.530	590.1	81.4						GS	bulletin
ASH	37.950	58.350	592.2	79.0						GS	record
TERS&	41.520	71.130	593.0	80.1		96.3	141.2		176.4	CSE	record
FRG	40.370	71.780	600.2	80.5			145.0		175.0	GS	record
FRG	40.370	71.780	600.2	82.0			144.5		164.5	GS	bulletin
VAN	37.948	58.108	612.9	82.0		93.5	135.0			GS	record
KZDZ&	41.250	71.980	645.5	87.6		107.7	156.8		189.2	CSE	record
ANR	40.750	72.370	659.0	89.0					184.5	GS	bulletin
ARKI&	41.770	71.970	667.9	89.8		110.1	160.2		191.7	CSE	record
RYAZ&	41.470	72.280	677.8	90.6		111.4	161.4		192.8	CSE	record
KARA&	41.620	72.580	707.3	94.1		116.5	166.8		198.7	CSE	record
UZUN&	41.970	72.520	718.6	95.4		117.3	167.2		201.2	CSE	record
KARK&	41.630	72.730	719.2	95.4		117.7	167.6		201.7	CSE	record
KZUR&	41.430	73.280	754.4	101.1		123.3	179.8		213.8	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/21/68	03:59:11.98	38.918	65.032

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KAT	39.028	56.270	757.9	99.0			175.0		215.0	GS	record
KAT	39.028	56.270	757.9	99.0						GS	bulletin
MUR	38.370	73.930	775.5	105.0		130.0	190.0		223.0	GS	record
MUR	38.370	73.930	775.5	104.9						GS	bulletin
WRS	34.150	71.400	776.2	104.0						ISC	bulletin
KAZA&	41.450	73.970	809.8	106.6		130.4	186.7		223.6	CSE	record
FRU	42.830	74.620	915.5	121.0						GS	bulletin
NRN&	41.420	75.800	956.2	126.2		158.4	226.6		274.0	CSE	record
NRN	41.430	76.000	972.7	126.2			223.0			GS	bulletin
KRS&	43.280	75.170	977.4	130.8		160.6	227.8		275.4	CSE	record
QUE	30.188	66.950	982.4	130.6				242.0		ISC	bulletin
BOMR&	42.500	75.930	1000.7	130.5		160.1	227.8		275.1	CSE	record
MNL	33.147	73.750	1011.0	133.0						ISC	bulletin
KRS	43.183	76.400	1063.9	137.8						GS	bulletin
AAA	43.267	76.950	1108.7	143.6					318.0	GS	record
TLG&	43.238	77.225	1128.3	145.8			258.1		318.7	CSE	record
AAB	43.230	77.230	1128.4	145.8						GS	bulletin
ILI	43.860	77.032	1140.7	148.0						GS	bulletin
AABK	43.733	77.216	1148.5	145.4		183.2			323.0	GS	record
ILI&	43.900	77.122	1149.1	147.6			260.6		321.1	CSE	record
LAH	31.550	74.333	1173.6	152.0						ISC	bulletin
PRZ	42.480	78.400	1193.8	155.6			277.0		343.0	GS	record
PRZ	42.480	78.400	1193.8	154.6						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/21/68	03:59:11.98	38.918	65.032

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRM&	42.980	78.270	1199.1	154.8			275.0		335.4	CSE	record
KRM	42.987	78.275	1199.7	154.8						GS	bulletin
CHI2&	43.438	78.413	1226.3	156.4			277.1		338.7	CSE	record
KZAG&	45.375	78.733	1335.9	171.3			303.4		379.5	CSE	record
MAK	42.961	47.505	1537.3	196.9						GS	bulletin
NDI	28.683	77.217	1594.7	200.0			351.0			ISC	bulletin
KRV	40.647	46.319	1609.0		211.5			388.0		GS	record
KRV	40.647	46.319	1609.0		211.4					GS	bulletin
GRS	39.500	46.330	1611.3	206.0						GS	record
KER	34.352	47.106	1675.3		215.0					ISC	bulletin
GRO	43.320	45.750	1684.8	213.0			386.0	407.5		GS	record
GRO	43.320	45.750	1684.8	213.0						GS	bulletin
TI2	41.730	44.750	1745.0	217.0	226.0					GS	bulletin
SEM	50.400	80.250	1747.6	218.8						GS	record
SEM	50.400	80.250	1747.6	217.7						GS	bulletin
UKGK&	49.833	82.283	1823.2	226.8				411.8	508.7	CSE	record
BKR	41.733	43.517	1847.3	231.2	240.6					GS	bulletin
PYA	44.033	43.058	1912.0	237.1						GS	bulletin
SOC	43.583	39.720	2171.6	269.0						GS	record
SOC	43.583	39.720	2171.6	268.0						GS	bulletin
CUR	50.097	88.352	2214.5	272.2						GS	bulletin
ELT	53.253	86.277	2269.6	276.4						GS	bulletin
POO	18.529	73.849	2410.2		292.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/21/68	03:59:11.98	38.918	65.032

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ALU	44.682	34.403	2604.5		310.2					GS	record
YAL	44.487	34.155	2623.0		311.0					GS	bulletin
SIM	44.949	34.116	2629.1		311.5					GS	record
KSA	33.823	35.890	2659.1		316.0					ISC	bulletin
HYB	17.417	78.553	2714.7		319.2					ISC	bulletin
MOS	55.738	37.625	2754.7		323.0					GS	bulletin
OBN	55.115	36.568	2778.2		324.4					GS	record
JER	31.772	35.197	2806.5		329.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/01/68	04:02:00.5	47.909	47.912

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GRO	43.320	45.750	536.5	72.5						GS	bulletin
MAK	42.961	47.505	550.2	75.1						GS	bulletin
PYA	44.033	43.058	571.1	76.5						GS	bulletin
TI2	41.730	44.750	729.7	96.5						GS	bulletin
BKR	41.733	43.517	768.1	101.0						GS	bulletin
STE	41.000	44.370	816.6	104.7			182.7			GS	bulletin
ANN	44.800	37.433	875.6	113.0						GS	bulletin
ERE	40.170	44.470	901.7	116.1						GS	bulletin
GRS	39.500	46.330	941.7	121.5						GS	bulletin
ALU	44.682	34.403	1098.0	139.6						GS	bulletin
SIM	44.949	34.116	1107.3	139.5						GS	bulletin
MOS	55.738	37.625	1120.0	141.5					309.5	GS	bulletin
OBN	55.115	36.568	1120.3	141.8		178.8	244.5		318.5	GS	record
YAL	44.487	34.155	1124.8	143.0						GS	bulletin
KAT	39.028	56.270	1193.1	152.5						GS	bulletin
SVE	56.827	60.637	1312.3	163.5						GS	bulletin
TEH	35.738	51.386	1380.0	175.0						ISC	bulletin
KER	34.352	47.106	1504.9	192.5						ISC	bulletin
IAS	47.193	27.562	1527.8	190.5						ISC	bulletin
FOC	45.695	27.183	1594.7	198.5						ISC	bulletin
VRI	45.870	26.725	1623.6	201.5						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/01/68	04:02:00.5	47.909	47.912

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ISK	41.066	29.059	1673.4	208.6						ISC	bulletin
BUC	44.414	26.097	1721.0	217.5						ISC	bulletin
PUL	59.773	30.324	1743.9	215.5						GS	bulletin
LVV	49.819	24.031	1755.8	216.5	226.5					GS	bulletin
CMP	45.268	25.038	1768.7	220.0						ISC	bulletin
SAM	39.660	66.950	1776.2	222.5	229.5					GS	bulletin
MZG	48.514	23.514	1805.0	223.6	232.4					GS	bulletin
TAS	41.340	69.310	1838.3	228.0	234.0					GS	bulletin
UZH	48.631	22.293	1871.3	233.2	247.2					GS	bulletin
DSH	38.570	68.760	1973.8	246.8						GS	bulletin
NIE	49.419	20.313	2026.6	248.5						ISC	bulletin
NUR	60.509	24.651	2044.8	248.3						ISC	bulletin
KRA	50.058	19.940	2047.3	249.5						ISC	bulletin
GAR	39.000	70.320	2052.8	254.4						GS	bulletin
SHI	29.644	52.526	2062.7	254.5						ISC	bulletin
JER	31.772	35.197	2086.9	259.5						ISC	bulletin
ANR	40.750	72.370	2092.9	258.5	261.5					GS	bulletin
FRU	42.830	74.620	2152.6	264.5						GS	bulletin
KRS&	43.280	75.170	2173.4	277.5						CSE	record
KJN	64.085	27.712	2176.1		263.7					ISC	bulletin
BOMR&	42.500	75.930	2265.3		276.8					CSE	record
BRA	48.168	17.105	2279.8		277.5					ISC	bulletin
ILI&	43.900	77.122	2293.0		277.7					CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/01/68	04:02:00.5	47.909	47.912

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KBL	34.541	69.043	2294.8		281.4					ISC	bulletin
NRN&	41.420	75.800	2308.7		282.9					CSE	record
OUL	65.085	25.896	2316.6		279.0					ISC	bulletin
NRN	41.430	76.000	2323.0		282.9					GS	bulletin
TLG&	43.238	77.225	2328.5		283.0					CSE	record
AAB	43.230	77.230	2329.2		283.1					GS	bulletin
VKA	48.265	16.318	2335.1		284.0					ISC	bulletin
APA	67.558	33.442	2336.9		281.1					GS	bulletin
MUR	38.370	73.930	2348.5		287.1					GS	bulletin
KZAG&	45.375	78.733	2358.1		285.1					CSE	record
UPP	59.858	17.627	2360.6		282.6					ISC	bulletin
KLS	56.165	15.592	2371.2		284.4					ISC	bulletin
CHI2&	43.438	78.413	2408.6		289.2					CSE	record
KRM&	42.980	78.270	2417.8		291.8					CSE	record
PRU	49.988	14.542	2432.5		292.0					ISC	bulletin
UME	63.815	20.237	2438.7		291.3					ISC	bulletin
PRA	50.070	14.433	2439.1		292.5					ISC	bulletin
WRS	34.150	71.400	2476.7		297.5					ISC	bulletin
SOD	67.371	26.629	2482.4		295.4					ISC	bulletin
UKGK&	49.833	82.283	2506.0		299.0					CSE	record
KHC	49.131	13.578	2515.8		300.5					ISC	bulletin
CLL	51.308	13.002	2524.5		300.4					ISC	bulletin
LJU	46.043	14.533	2525.8		302.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/01/68	04:02:00.5	47.909	47.912

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
QUE	30.188	66.950	2547.9		304.9					ISC	bulletin
COP	55.683	12.433	2560.7		304.1					ISC	bulletin
UDD	60.090	13.607	2581.6		305.4					ISC	bulletin
TRI	45.709	13.764	2593.7		308.0					ISC	bulletin
KRK	69.724	30.063	2614.8		308.5					ISC	bulletin
GOT	57.698	11.978	2615.2		308.8					ISC	bulletin
MOX	50.665	11.616	2629.2		310.5					ISC	bulletin
KEV	69.755	27.007	2682.8		313.9					ISC	bulletin
FUR	48.163	11.275	2703.6		317.5					ISC	bulletin
KIR	67.840	20.417	2704.5		316.4					ISC	bulletin
MNL	33.147	73.750	2709.1		318.5					ISC	bulletin
ELT	53.253	86.277	2744.1		319.5					GS	bulletin
LHN	61.049	10.880	2754.3		320.3					ISC	bulletin
AQU	42.354	13.403	2756.3		317.5					ISC	bulletin
SKA	63.580	12.280	2775.1		322.2					ISC	bulletin
KON	59.649	9.598	2788.5		323.8					ISC	bulletin
STU	48.772	9.195	2838.1		328.8					ISC	bulletin
HEI	49.399	8.726	2856.6		330.2					ISC	bulletin
TRO	69.632	18.928	2882.2		331.1					ISC	bulletin
KRL	49.011	8.412	2888.1		333.5					ISC	bulletin
BUH	48.676	8.228	2909.7		335.1					ISC	bulletin
BNS	50.964	7.176	2933.5		336.5					ISC	bulletin
WIT	52.813	6.670	2940.3		337.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/01/68	04:02:00.5	47.909	47.912

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
STR	48.585	7.766	2945.2		337.5					ISC	bulletin
WLS	48.413	7.354	2979.3		340.1					ISC	bulletin
GEN	44.418	8.930	3000.0		341.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/02/69	04:59:58.61	57.220	55.393

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	321.2	47.4						GS	bulletin
KUST&	52.583	62.583	691.1	89.0		109.2	161.0		192.9	CSE	record
RAIS&	52.930	67.440	903.2	117.2		147.7	215.0		254.6	CSE	record
VOLD&	53.261	68.157	921.3	119.1		150.1	217.4		262.9	CSE	record
IMAN&	52.960	68.300	948.1	122.9		152.3	222.1		267.2	CSE	record
KKOR&	52.912	69.025	991.2	127.8		159.8	226.0		275.9	CSE	record
VLAD&	52.283	68.617	1010.2	130.4		163.5	230.1		281.3	CSE	record
BRV&	53.005	70.050	1042.9	136.1		169.8	240.2		295.9	CSE	record
MOS	55.738	37.625	1103.4	141.4					307.4	GS	bulletin
OBN	55.115	36.568	1188.0	149.9		190.4	269.9		339.4	GS	record
OBN	55.115	36.568	1188.0	150.2		191.4			333.4	GS	bulletin
APA	67.558	33.442	1600.5	201.8						GS	bulletin
KJN	64.085	27.712	1677.4	209.2			367.4			ISC	bulletin
NVS	54.850	83.266	1743.9	217.4					491.4	GS	record
NVS	54.850	83.266	1743.9	219.4						GS	bulletin
OUL	65.085	25.896	1789.9	220.8			396.4			ISC	bulletin
SEM	50.400	80.250	1790.2	220.1						GS	bulletin
NUR	60.509	24.651	1793.1	220.3			393.4			ISC	bulletin
SOD	67.371	26.629	1844.2	227.4						ISC	bulletin
BKR	41.733	43.517	1917.3	239.5						GS	bulletin
VYP&	50.190	28.273	1936.4	236.0						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/02/69	04:59:58.61	57.220	55.393

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ABS	41.750	42.810	1938.2	239.4						GS	bulletin
KRV	40.647	46.319	1953.3	239.6						GS	bulletin
KEV	69.755	27.007	1953.3	240.8			431.4			ISC	bulletin
STE	41.000	44.370	1967.5	243.4						GS	bulletin
ELT	53.253	86.277	1994.1	246.2						GS	bulletin
ELT	53.253	86.277	1994.1	246.4						GS	record
SIM	44.949	34.116	2004.1	252.4						GS	bulletin
ALU	44.682	34.403	2012.8	250.7						GS	bulletin
UME	63.815	20.237	2033.6	248.6						ISC	bulletin
YAL	44.487	34.155	2042.0	252.4						GS	bulletin
GRS	39.500	46.330	2075.3	255.4						GS	bulletin
UZUN&	41.970	72.520	2085.3	259.1						CSE	record
KIR	67.840	20.417	2110.1	259.4						ISC	bulletin
KARA&	41.620	72.580	2121.5	261.9						CSE	record
RYAZ&	41.470	72.280	2123.9	263.8						CSE	record
KARK&	41.630	72.730	2126.7	263.8						CSE	record
KZUR&	41.430	73.280	2168.7	266.6						CSE	record
TLG&	43.238	77.225	2180.7	268.6						CSE	record
AAB	43.230	77.230	2181.7	268.6						GS	bulletin
UPP	59.858	17.627	2187.6	264.4						ISC	bulletin
KOV	48.315	25.067	2247.3	272.4						GS	bulletin
KRM	42.987	78.275	2254.6	276.1						GS	bulletin
DSH	38.570	68.760	2290.0	280.1						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/02/69	04:59:58.61	57.220	55.393

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GAR	39.000	70.320	2296.9	281.6						GS	bulletin
SRI	36.758	49.383	2315.5		282.2					ISC	bulletin
MZG	48.514	23.514	2325.8		281.4					GS	bulletin
APP	60.539	13.928	2378.0		286.3					ISC	bulletin
UZH	48.631	22.293	2390.7		287.2					GS	bulletin
KUL	37.900	69.780	2391.6		293.2					GS	bulletin
HFS	60.134	13.696	2398.5		287.9					ISC	bulletin
SLL	60.476	13.320	2412.1		290.3					ISC	bulletin
KRA	50.058	19.940	2442.5		291.8					ISC	bulletin
NIE	49.419	20.313	2459.0		294.1					ISC	bulletin
CMP	45.268	25.038	2468.8		297.4					ISC	bulletin
KHO	37.480	71.530	2493.5		300.2					GS	bulletin
UER	51.563	94.087	2551.9		304.4			557.4		GS	record
UER	51.563	94.087	2551.9		304.9					GS	bulletin
COP	55.683	12.433	2609.2		311.4					ISC	bulletin
KON	59.649	9.598	2634.0		311.7					ISC	bulletin
BUD	47.484	19.024	2662.0		315.4					ISC	bulletin
KBL	34.541	69.043	2719.4		322.9					ISC	bulletin
BRA	48.168	17.105	2731.6		320.4					ISC	bulletin
PRU	49.988	14.542	2772.4		323.4					ISC	bulletin
CLL	51.308	13.002	2788.8		324.5					ISC	bulletin
KBS	78.918	11.924	2874.0		331.5					ISC	bulletin
KHC	49.131	13.578	2883.0		332.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/02/69	04:59:58.61	57.220	55.393

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CIN	37.600	28.087	2958.6		338.4					ISC	bulletin
MOY	51.670	101.000	2961.7		341.1					GS	bulletin
GRF	49.692	11.222	2990.7		342.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/08/69	04:59:58.70	57.220	55.417

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	319.8	46.3						GS	bulletin
SVE	56.827	60.637	319.8	46.8		49.8	86.3		93.3	GS	record
KUST&	52.583	62.583	690.1	88.8		108.7	160.0		191.4	CSE	record
RAIS&	52.930	67.440	901.9	115.8		147.8	214.3		253.3	CSE	record
VOLD&	53.261	68.157	919.9	119.5		149.3	217.7		263.0	CSE	record
IMAN&	52.960	68.300	946.7	122.8		153.3	223.1		267.6	CSE	record
KKOR&	52.912	69.025	989.8	127.5		159.1	225.3		275.7	CSE	record
VLAD&	52.283	68.617	1008.9	129.5		162.6	228.8		279.4	CSE	record
BORK&	58.040	38.210	1028.7	133.0		167.5	230.2		284.0	CSE	record
BRV&	53.005	70.050	1041.6	135.6		169.3	239.5		296.7	CSE	record
BRV	53.083	70.250	1048.3	134.3			235.0			GS	bulletin
MOS	55.738	37.625	1104.8	143.3						GS	bulletin
OBN	55.115	36.568	1189.5	149.7		190.3	269.9		339.3	GS	record
OBN	55.115	36.568	1189.5	150.3						GS	bulletin
PUL	59.773	30.324	1480.6	195.3						GS	bulletin
APA	67.558	33.442	1601.4	201.6						GS	bulletin
KJN	64.085	27.712	1678.5	209.5			367.3			ISC	bulletin
NVS	54.850	83.266	1742.4	219.3						GS	record
SEM	50.400	80.250	1788.8	222.8						GS	bulletin
OUL	65.085	25.896	1791.0	221.0			396.3			ISC	bulletin
NUR	60.509	24.651	1794.4	220.2			393.3			ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/08/69	04:59:58.70	57.220	55.417

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BOGY&	49.520	30.830	1831.9	224.6	231.1					CSE	record
SOD	67.371	26.629	1845.1	228.3			414.3			ISC	bulletin
DUS	42.080	44.700	1846.4	230.3						GS	bulletin
GOR	41.980	44.130	1873.7	231.9						GS	bulletin
BALD&	56.660	24.330	1876.0	230.8	235.4			429.0		CSE	record
BKR	41.733	43.517	1918.0	239.4				425.4		GS	bulletin
VYP&	50.190	28.273	1937.8	237.4	244.0			436.6		CSE	record
KEV	69.755	27.007	1954.1	240.5			429.3			ISC	bulletin
SOSN&	50.818	27.131	1967.4	238.8	246.0					CSE	record
ELT	53.253	86.277	1992.7	246.1			447.1			GS	record
ELT	53.253	86.277	1992.7	246.4						GS	bulletin
LITI&	49.299	28.128	2003.5	243.3	244.0					CSE	record
SIM	44.949	34.116	2005.3	251.3						GS	bulletin
ALU	44.682	34.403	2014.0	251.3						GS	bulletin
TAS	41.340	69.310	2024.1	250.3						GS	bulletin
UME	63.815	20.237	2034.8	249.1			451.3			ISC	bulletin
YAL	44.487	34.155	2043.2	250.3						GS	bulletin
UZUN&	41.970	72.520	2084.3	259.9						CSE	record
DEM&	48.850	26.925	2103.7	256.2	260.5					CSE	record
KIR	67.840	20.417	2111.0	259.3						ISC	bulletin
KARA&	41.620	72.580	2120.6	264.1						CSE	record
RYAZ&	41.470	72.280	2122.9	264.2						CSE	record
KIS	46.998	28.818	2125.6	261.3						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/08/69	04:59:58.70	57.220	55.417

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KARK&	41.630	72.730	2125.7	264.3						CSE	record
KZUR&	41.430	73.280	2167.7	266.0						CSE	record
TLG&	43.238	77.225	2179.5	268.5						CSE	record
AAB	43.230	77.230	2180.5	268.5				505.4		GS	bulletin
UPP	59.858	17.627	2189.0	264.2						ISC	bulletin
TRO	69.632	18.928	2230.9	272.8						ISC	bulletin
KOV	48.315	25.067	2248.7	272.3						GS	bulletin
KRM	42.987	78.275	2253.4	276.3						GS	bulletin
BOGR&	48.737	24.055	2280.4	273.2	276.5		505.7			CSE	record
NRN	41.430	76.000	2286.3		282.3					GS	bulletin
CUR	50.097	88.352	2288.7		279.7		505.8			GS	bulletin
GAR	39.000	70.320	2296.1		281.3					GS	bulletin
SRI	36.758	49.383	2315.8		282.3					ISC	bulletin
MZG	48.514	23.514	2327.2		281.7					GS	bulletin
KAS	41.372	33.767	2340.8		283.3					ISC	bulletin
MKOP&	48.155	23.094	2376.0		285.7					CSE	record
APP	60.539	13.928	2379.3		286.2					ISC	bulletin
KUL	37.900	69.780	2390.8		291.4					GS	bulletin
UZH	48.631	22.293	2392.1		287.3					GS	bulletin
HFS	60.134	13.696	2399.8		288.0					ISC	bulletin
SLL	60.476	13.320	2413.4		290.6					ISC	bulletin
KRA	50.058	19.940	2444.0		291.3					ISC	bulletin
NIE	49.419	20.313	2460.5		294.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/08/69	04:59:58.70	57.220	55.417

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CMP	45.268	25.038	2470.2		305.3					ISC	bulletin
KHO	37.480	71.530	2492.6		300.8					GS	bulletin
UER	51.563	94.087	2550.5		302.3					GS	bulletin
UER	51.563	94.087	2550.5		304.6					GS	record
COP	55.683	12.433	2610.6		310.8					ISC	bulletin
KHE	80.620	58.050	2611.5		309.8					GS	bulletin
KHE	80.620	58.050	2611.5		310.0					GS	record
KON	59.649	9.598	2635.3		311.8					ISC	bulletin
BUD	47.484	19.024	2663.4		314.3					ISC	bulletin
KBL	34.541	69.043	2718.7		320.1					ISC	bulletin
BRA	48.168	17.105	2733.0		319.3					ISC	bulletin
VKA	48.265	16.318	2774.1		324.3					ISC	bulletin
PRA	50.070	14.433	2775.5		328.3					ISC	bulletin
CLL	51.308	13.002	2790.3		324.4					ISC	bulletin
KBS	78.918	11.924	2874.5		331.3					ISC	bulletin
KHC	49.131	13.578	2884.4		332.5					ISC	bulletin
MOX	50.665	11.616	2910.5		334.3					ISC	bulletin
MOY	51.670	101.000	2960.2		339.8					GS	bulletin
GRF	49.692	11.222	2992.1		342.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/69	06:59:58.14	45.848	42.600

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZUG	42.400	41.800	387.9	55.9						GS	bulletin
GOR	41.980	44.130	446.4	63.7						GS	bulletin
ABS	41.750	42.810	455.1	65.3						GS	bulletin
BKR	41.733	43.517	462.5	65.9						GS	bulletin
TI2	41.730	44.750	488.5	68.9			118.9			GS	bulletin
MAK	42.961	47.505	504.8	70.9						GS	bulletin
STE	41.000	44.370	556.6	76.9						GS	bulletin
FEO	45.019	35.390	570.8	78.9						GS	bulletin
ERE	40.170	44.470	648.0	90.4						GS	bulletin
KRV	40.647	46.319	651.0	87.9		108.9				GS	bulletin
ALU	44.682	34.403	655.2	87.8						GS	bulletin
YAL	44.487	34.155	679.8	89.9						GS	bulletin
GRS	39.500	46.330	767.3	104.9			180.9			GS	bulletin
KAS	41.372	33.767	867.5	114.9						ISC	bulletin
BOGY&	49.520	30.830	971.0	124.3		156.6				CSE	record
KIS	46.998	28.818	1064.5	137.4			248.9			GS	bulletin
OBN	55.115	36.568	1114.2	142.4						GS	bulletin
OBN	55.115	36.568	1114.2	142.4		178.5	252.3		319.9	GS	record
LITI&	49.299	28.128	1151.1	147.0					325.2	CSE	record
MOS	55.738	37.625	1153.0	147.9			262.9		331.9	GS	bulletin
SRI	36.758	49.383	1155.7	151.2						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/69	06:59:58.14	45.848	42.600

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VYP&	50.190	28.273	1169.1	154.1		189.9	266.8		324.0	CSE	record
BAC	46.567	26.900	1210.9	154.9						ISC	bulletin
ISK	41.066	29.059	1214.2	155.8			276.9			ISC	bulletin
DEM&	48.850	26.925	1226.7	154.5			275.7		335.3	CSE	record
VRI	45.870	26.725	1229.4	157.9						ISC	bulletin
SOSN&	50.818	27.131	1268.6	159.2			281.9		362.0	CSE	record
CRA	48.283	25.933	1290.6	167.8					367.8	GS	bulletin
TEH	35.738	51.386	1341.7	172.9						ISC	bulletin
KAT	39.028	56.270	1351.3	172.9			308.9			GS	bulletin
KOV	48.315	25.067	1354.8	170.9						GS	bulletin
BORK&	58.040	38.210	1387.9	176.4					386.0	CSE	record
BOGR&	48.737	24.055	1433.7	175.5						CSE	record
KSA	33.823	35.890	1449.9	190.9						ISC	bulletin
LVV	49.819	24.031	1452.7	183.9				337.9	413.9	GS	bulletin
MZG	48.514	23.514	1471.1				328.9		412.4	GS	bulletin
MKOP&	48.155	23.094	1499.7	188.8			347.6		432.6	CSE	record
PRK	39.246	26.272	1522.4	192.8						ISC	bulletin
UZH	48.631	22.293	1561.8	194.4			344.9			GS	bulletin
ARG	36.216	28.126	1613.5		223.9					ISC	bulletin
KUST&	52.583	62.583	1628.2	203.6			360.4	380.5		CSE	record
PLG	40.374	23.446	1666.1	212.1						ISC	bulletin
JER	31.772	35.197	1685.2	215.9						ISC	bulletin
NIE	49.419	20.313	1712.7	214.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/69	06:59:58.14	45.848	42.600

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	1741.1	214.9						GS	bulletin
BALD&	56.660	24.330	1741.6	215.9	236.4		379.0			CSE	record
SKO	41.972	21.439	1745.6	216.6						ISC	bulletin
KRA	50.058	19.940	1746.7	216.9						ISC	bulletin
PUL	59.773	30.324	1749.1	216.9						GS	bulletin
ATH	37.972	23.717	1785.5	226.9						ISC	bulletin
BUD	47.484	19.024	1804.5	225.9						ISC	bulletin
SRO	47.813	18.313	1856.1		238.9					ISC	bulletin
EIL	29.550	34.950	1925.2	238.9						ISC	bulletin
VAM	35.407	24.200	1930.5	241.9						ISC	bulletin
BRA	48.168	17.105	1944.7	241.9						ISC	bulletin
VIE	48.248	16.362	1999.5	248.9			448.9			ISC	bulletin
VLS	38.177	20.590	2000.9	250.9						ISC	bulletin
VKA	48.265	16.318	2002.7	250.3			450.9			ISC	bulletin
NUR	60.509	24.651	2009.7	247.6			452.9			ISC	bulletin
ZAG	45.829	15.994	2055.1	255.9						ISC	bulletin
PRU	49.988	14.542	2131.5	262.6						ISC	bulletin
BRV	53.083	70.250	2141.0	262.9						GS	bulletin
LJU	46.043	14.533	2162.6	268.4						ISC	bulletin
CHM	42.319	69.603	2184.5		268.9					GS	bulletin
TAS	41.340	69.310	2200.4		271.9					GS	bulletin
KHC	49.131	13.578	2201.1		271.6					ISC	bulletin
TRI	45.709	13.764	2227.9		273.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/69	06:59:58.14	45.848	42.600

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KJN	64.085	27.712	2228.5		271.5					ISC	bulletin
CLL	51.308	13.002	2247.5		274.9					ISC	bulletin
UPP	59.858	17.627	2266.5		274.4					ISC	bulletin
DSH	38.570	68.760	2290.8		282.1					GS	bulletin
MOX	50.665	11.616	2341.5		285.4					ISC	bulletin
OUL	65.085	25.896	2369.3		285.8					ISC	bulletin
GRF	49.692	11.222	2370.1		288.9					ISC	bulletin
FUR	48.163	11.275	2376.9		288.9					ISC	bulletin
MES	38.199	15.555	2378.2		288.9					ISC	bulletin
NAM	41.000	71.660	2396.8		291.2					GS	bulletin
KUL	37.900	69.780	2405.0		293.3					GS	bulletin
UZUN&	41.970	72.520	2424.0		294.1					CSE	record
RMP	41.811	12.702	2428.5		294.4					ISC	bulletin
UME	63.815	20.237	2433.3		292.2					ISC	bulletin
FRG	40.370	71.780	2433.8		294.5					GS	bulletin
KARA&	41.620	72.580	2442.4		296.2					CSE	record
APA	67.558	33.442	2474.1		296.1					GS	bulletin
HAM	53.465	9.925	2478.5		298.6					ISC	bulletin
FRU	42.830	74.620	2555.0		305.9					GS	bulletin
KBL	34.541	69.043	2556.9		307.9					ISC	bulletin
KHO	37.480	71.530	2561.5		308.3					GS	bulletin
TNS	50.222	8.447	2566.9		307.4					ISC	bulletin
SOD	67.371	26.629	2569.7		305.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/69	06:59:58.14	45.848	42.600

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRL	49.011	8.412	2578.2		309.9					ISC	bulletin
BUH	48.676	8.228	2595.3		310.4					ISC	bulletin
STR	48.585	7.766	2630.3		313.7					ISC	bulletin
BNS	50.964	7.176	2654.0		314.9					ISC	bulletin
WIT	52.813	6.670	2690.0		318.5					ISC	bulletin
RYB	42.280	76.110	2690.5		326.6					GS	bulletin
RYB	42.280	76.110	2690.5		326.7					GS	record
MUR	38.370	73.930	2697.5		321.6					GS	bulletin
NRN	41.430	76.000	2715.5		321.1					GS	bulletin
AAA	43.267	76.950	2719.8		322.5					GS	bulletin
QUE	30.188	66.950	2731.7		322.3					ISC	bulletin
LUX	49.600	6.133	2737.2		322.9					ISC	bulletin
TLG&	43.238	77.225	2742.0		323.4					CSE	record
AAB	43.230	77.230	2742.6		323.4					GS	bulletin
AAB	43.230	77.230	2742.6		323.4					GS	record
WRS	34.150	71.400	2755.8		325.3					ISC	bulletin
LNS	45.289	6.915	2760.0		322.4					ISC	bulletin
KIR	67.840	20.417	2761.1		321.9					ISC	bulletin
RSL	45.688	6.626	2771.4		323.5					ISC	bulletin
ISO	44.183	7.050	2782.0		325.0					ISC	bulletin
WRM	49.833	5.381	2788.8		328.9					ISC	bulletin
KEV	69.755	27.007	2798.1		325.5					ISC	bulletin
KRM	42.987	78.275	2831.8		331.8					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/69	06:59:58.14	45.848	42.600

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DOU	50.096	4.594	2842.2		326.4					ISC	bulletin
PRZ	42.480	78.400	2860.0		333.4					GS	bulletin
NIL	33.650	73.252	2926.0		337.9					ISC	bulletin
LOR	47.268	3.859	2941.2		337.6					ISC	bulletin
TRO	69.632	18.928	2954.7		338.3					ISC	bulletin
SSF	47.062	3.506	2972.0		340.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/06/69	07:02:59.85	43.867	54.800

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KAT	39.028	56.270	550.5	76.2						GS	bulletin
MAK	42.961	47.505	598.4	81.2						GS	bulletin
SHE	40.646	48.642	620.3	85.4						GS	bulletin
ASH	37.950	58.350	720.7	96.5						GS	bulletin
LNK	38.758	48.852	753.5	100.2						GS	bulletin
KRV	40.647	46.319	784.3	102.2						GS	bulletin
TI2	41.730	44.750	854.0	112.2						GS	bulletin
GRS	39.500	46.330	854.0	111.8		141.8	199.8			GS	bulletin
GOR	41.980	44.130	894.1	118.2						GS	bulletin
STE	41.000	44.370	913.4	118.6						GS	bulletin
MSH	36.311	59.588	931.2	122.2						ISC	bulletin
ERE	40.170	44.470	946.8	124.7					272.7	GS	bulletin
TEH	35.738	51.386	947.1	122.7						ISC	bulletin
TAB	38.068	46.327	958.7	126.4						ISC	bulletin
ABS	41.750	42.810	1006.2	131.6						GS	bulletin
SAM	39.660	66.950	1110.2	141.2						GS	bulletin
KUST&	52.583	62.583	1126.0	143.3			253.2		313.3	CSE	record
URG&	39.388	67.262	1148.3	148.2			260.6		322.9	CSE	record
TAS	41.340	69.310	1220.0	155.7			274.2			GS	bulletin
KER	34.352	47.106	1245.2	163.2						ISC	bulletin
DSH	38.570	68.760	1305.9	167.6					370.6	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/06/69	07:02:59.85	43.867	54.800

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ANN	44.800	37.433	1384.7	177.2						GS	bulletin
GAR	39.000	70.320	1400.5	178.7						GS	bulletin
ARYK&	52.945	68.245	1411.9	177.7			318.3	341.5	397.4	CSE	record
NAM	41.000	71.660	1418.8	181.3						GS	bulletin
KUL	37.900	69.780	1420.8	180.2						GS	bulletin
FRG	40.370	71.780	1452.0	184.4						GS	bulletin
SVE	56.827	60.637	1497.6	188.2			338.2			GS	bulletin
BRV	53.083	70.250	1527.3	192.8			340.2			GS	bulletin
FEO	45.019	35.390	1544.9	197.2						GS	bulletin
KHO	37.480	71.530	1576.1	200.0						GS	bulletin
SHI	29.644	52.526	1588.5	203.4						ISC	bulletin
KBL	34.541	69.043	1601.4	202.9						ISC	bulletin
FRU	42.830	74.620	1605.2	203.2					460.2	GS	bulletin
ALU	44.682	34.403	1624.7	204.0						GS	bulletin
SIM	44.949	34.116	1645.5	208.2						GS	bulletin
YAL	44.487	34.155	1646.0	205.2						GS	bulletin
MUR	38.370	73.930	1711.4	219.3						GS	bulletin
KAS	41.372	33.767	1740.6	220.4						ISC	bulletin
AAA	43.267	76.950	1783.1	227.2						GS	bulletin
WRS	34.150	71.400	1789.0	225.6						ISC	bulletin
MOS	55.738	37.625	1797.5	223.2			399.2			GS	bulletin
TLG&	43.238	77.225	1805.6	226.8	243.3		409.0	427.3	518.0	CSE	record
AAB	43.230	77.230	1806.2	226.8						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/06/69	07:02:59.85	43.867	54.800

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
OBN	55.115	36.568	1807.3		231.0		399.2			GS	bulletin
QUE	30.188	66.950	1856.1		234.3					ISC	bulletin
KRM	42.987	78.275	1894.6	238.0						GS	bulletin
PRZ	42.480	78.400	1916.1	240.7						GS	bulletin
BOGY&	49.520	30.830	1926.3	238.5	242.6		438.5		547.5	CSE	record
BORK&	58.040	38.210	1947.8	238.9	243.0			448.2	548.9	CSE	record
NIL	33.650	73.252	1954.0	245.2						ISC	bulletin
KSA	33.823	35.890	1973.9		250.2					ISC	bulletin
MNL	33.147	73.750	2025.4		253.8					ISC	bulletin
KIS	46.998	28.818	2050.5	252.7				466.2		GS	bulletin
RUS&	48.300	28.300	2094.4	258.3	262.4			473.8		CSE	record
LITI&	49.299	28.128	2116.7	261.1	265.0		461.0			CSE	record
VYP&	50.190	28.273	2119.8	261.0			461.4			CSE	record
ISK	41.066	29.059	2128.1	263.7						ISC	bulletin
PONI&	50.183	27.533	2171.8	266.0	268.9		488.4			CSE	record
JER	31.772	35.197	2173.5		271.5					ISC	bulletin
LAH	31.550	74.333	2185.7		270.7					ISC	bulletin
BAC	46.567	26.900	2197.7		270.2					ISC	bulletin
DEM&	48.850	26.925	2199.6	269.1			483.9		619.3	CSE	record
SOSN&	50.818	27.131	2211.0	269.4				498.9	627.4	CSE	record
VRI	45.870	26.725	2215.7		271.2					ISC	bulletin
CRA	48.283	25.933	2269.6		277.0					GS	bulletin
BUC	44.414	26.097	2283.0		279.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/06/69	07:02:59.85	43.867	54.800

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KOV	48.315	25.067	2333.8		284.2					GS	bulletin
CIN	37.600	28.087	2346.2		286.2					ISC	bulletin
CMP	45.268	25.038	2353.1		288.2					ISC	bulletin
EIL	29.550	34.950	2365.6		288.2					ISC	bulletin
NVS	54.850	83.266	2375.0		289.3					GS	bulletin
NVS	54.850	83.266	2375.0		289.2					GS	record
RAK	48.055	24.198	2398.2		289.2					GS	bulletin
ARG	36.216	28.126	2413.2		291.2					ISC	bulletin
PUL	59.773	30.324	2416.0		290.2					GS	bulletin
LVV	49.819	24.031	2416.9		291.2					GS	bulletin
PRK	39.246	26.272	2418.5		292.2					ISC	bulletin
MZG	48.514	23.514	2448.9		294.6					GS	bulletin
ELT	53.253	86.277	2518.0		301.5					GS	bulletin
UZH	48.631	22.293	2539.0		303.0					GS	bulletin
BALD&	56.660	24.330	2561.9		304.7					CSE	record
HLW	29.858	31.342	2586.4		308.7					ISC	bulletin
NDI	28.683	77.217	2606.1		311.2					ISC	bulletin
CUR	50.097	88.352	2617.8		311.2					GS	bulletin
NIE	49.419	20.313	2683.5		316.6					ISC	bulletin
SKO	41.972	21.439	2710.0		320.1					ISC	bulletin
KRA	50.058	19.940	2711.2		319.1					ISC	bulletin
NUR	60.509	24.651	2725.6		319.0					ISC	bulletin
KJN	64.085	27.712	2820.3		326.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/06/69	07:02:59.85	43.867	54.800

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
APA	67.558	33.442	2922.6		336.2					GS	bulletin
BRA	48.168	17.105	2924.6		337.2					ISC	bulletin
VKA	48.265	16.318	2981.8		341.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/25/70	04:59:55.5	52.20 (?)	55.70 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CHIA&	55.530	61.360	524.7	71.8		82.3			145.3	CSE	record
NIP&	56.230	61.090	569.2	77.2		93.9	134.9		163.3	CSE	record
KAVO&	56.530	61.350	605.1	80.8		94.2	142.6		168.8	CSE	record
KKOR&	52.912	69.025	905.2	119.8			211.6		256.9	CSE	record
BRV	53.083	70.250	987.4	128.6						GS	bulletin
NUKU&	42.100	60.483	1178.1	151.5			264.1		327.6	CSE	record
OBN	55.115	36.568	1300.4	164.9		208.3			366.5	GS	record
ZER&	41.573	64.277	1346.5	173.0			306.7		385.3	CSE	record
DUS	42.080	44.700	1395.9	181.1						GS	bulletin
ABS	41.750	42.810	1514.1	192.5						GS	bulletin
URG&	39.388	67.262	1677.5	212.7			380.8	399.2	483.7	CSE	record
SEM	50.400	80.250	1714.2	215.9						GS	bulletin
TAB	38.068	46.327	1729.6	219.5						ISC	bulletin
ALU	44.682	34.403	1772.7	223.5						GS	bulletin
SRI	36.758	49.383	1784.1	224.5						ISC	bulletin
YAL	44.487	34.155	1801.3	226.5						GS	bulletin
TEH	35.738	51.386	1858.4	234.5						ISC	bulletin
TLG&	43.238	77.225	1884.8	233.1	245.5		421.1	433.3	533.2	CSE	record
AAB	43.230	77.230	1885.7		237.0					GS	bulletin
SUFI&	40.057	73.553	1918.0		242.3			439.1	552.3	CSE	record
KRM	42.987	78.275	1968.5	245.8						GS	bulletin
SOSN&	50.818	27.131	1975.0	241.7	249.0			447.7	568.8	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/25/70	04:59:55.5	52.20 (?)	55.70 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TEGR&	43.390	79.720	2033.2		255.4					CSE	record
KAS	41.372	33.767	2046.9		255.6					ISC	bulletin
ELT	53.253	86.277	2051.9	255.5						GS	record
BKOL&	42.633	79.983	2101.7		262.4					CSE	record
NUR	60.509	24.651	2103.2	256.5			451.5			ISC	bulletin
OUL	65.085	25.896	2210.9	269.5			487.5			ISC	bulletin
SOD	67.371	26.629	2307.2	279.3						ISC	bulletin
CMP	45.268	25.038	2360.4		289.5					ISC	bulletin
UME	63.815	20.237	2415.4		290.0					ISC	bulletin
KEV	69.755	27.007	2448.6		293.0					ISC	bulletin
UPP	59.858	17.627	2479.8		295.8					ISC	bulletin
NIE	49.419	20.313	2486.1		297.5					ISC	bulletin
KRA	50.058	19.940	2487.1		297.3					ISC	bulletin
JOS	48.496	20.539	2508.7		302.0					ISC	bulletin
SHI	29.644	52.526	2514.9		304.7					ISC	bulletin
NRI	69.430	88.083	2545.2		304.5					GS	record
KIR	67.840	20.417	2563.9		304.5					ISC	bulletin
PSZ	47.919	19.894	2578.1		308.5					ISC	bulletin
UER	51.563	94.087	2611.3		310.3					GS	record
HFS	60.134	13.696	2699.8		316.9					ISC	bulletin
TRO	69.632	18.928	2705.5		317.2					ISC	bulletin
SLL	60.476	13.320	2720.9		318.5					ISC	bulletin
JER	31.772	35.197	2809.6		330.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/25/70	04:59:55.5	52.20 (?)	55.70 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SOP	47.683	16.558	2816.1		328.5					ISC	bulletin
CLL	51.308	13.002	2905.1		334.8					ISC	bulletin
KHC	49.131	13.578	2952.7		339.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/12/70	07:00:59.83	43.85	54.80

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NUKU&	42.100	60.483	501.9	68.4		80.6	125.0		140.9	CSE	record
SHE	40.646	48.642	619.3	86.2						GS	bulletin
ZER&	41.573	64.277	814.9	106.0		132.2	190.3		230.2	CSE	record
GOR	41.980	44.130	893.8	118.2						GS	bulletin
SRI	36.758	49.383	910.4	118.1						ISC	bulletin
STE	41.000	44.370	912.9	118.9						GS	bulletin
MSH	36.311	59.588	929.6	123.0						ISC	bulletin
TEH	35.738	51.386	945.3	124.6						ISC	bulletin
TAB	38.068	46.327	957.5	126.8						ISC	bulletin
ABS	41.750	42.810	1005.9	131.6						GS	bulletin
URG&	39.388	67.262	1147.6	146.1			260.6		327.0	CSE	record
ERZ	39.915	41.277	1201.1	158.7						ISC	bulletin
SOC	43.583	39.720	1212.4	156.2		198.2				GS	bulletin
DOLG&	55.350	61.380	1361.9	170.4			302.5		366.6	CSE	record
NAM	41.000	71.660	1418.6	181.2						GS	bulletin
NIP&	56.230	61.090	1446.1	181.4			313.5			CSE	record
KKOR&	52.912	69.025	1451.6	182.7						CSE	record
FRG	40.370	71.780	1451.7	184.8						GS	bulletin
KAVO&	56.530	61.350	1483.0	185.4			327.9	342.3	422.8	CSE	record
SVE	56.827	60.637	1499.4	187.4			339.2			GS	record
BRV	53.083	70.250	1528.7	192.2				354.0		GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/12/70	07:00:59.83	43.85	54.80

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
FEO	45.019	35.390	1545.2	194.2						GS	bulletin
SHI	29.644	52.526	1586.6	204.1						ISC	bulletin
KBL	34.541	69.043	1600.3	203.2						ISC	bulletin
SUFI&	40.057	73.553	1604.8	201.6			360.9	380.8	454.0	CSE	record
ALU	44.682	34.403	1625.0	204.0			362.2			GS	bulletin
KAS	41.372	33.767	1740.5		220.7					ISC	bulletin
FABK	43.147	76.447	1745.3	219.1						GS	bulletin
AAA	43.267	76.950	1783.3	224.0						GS	bulletin
TLG&	43.238	77.225	1805.8	226.5	240.7		407.8	424.0	508.3	CSE	record
AAB	43.230	77.230	1806.3	226.5						GS	bulletin
OBN	55.115	36.568	1808.8	223.2			396.8		514.2	GS	record
KDSK	42.123	77.188	1828.0	231.4						GS	bulletin
QUE	30.188	66.950	1854.6		234.0					ISC	bulletin
MGN	40.925	32.181	1882.1		238.7					ISC	bulletin
KRM	42.987	78.275	1894.8		239.0					GS	bulletin
KSA	33.823	35.890	1973.0		249.2			459.2		ISC	bulletin
TEGR&	43.390	79.720	2002.0	249.3	253.6			459.9	569.6	CSE	record
BKOL&	42.633	79.983	2039.3		254.6					CSE	record
GPA	40.289	30.309	2054.4		256.2					ISC	bulletin
ISK	41.066	29.059	2128.1		263.3					ISC	bulletin
IST	41.046	28.996	2133.9		264.9					ISC	bulletin
IAS	47.193	27.562	2146.5		262.2					ISC	bulletin
JER	31.772	35.197	2172.5		270.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/12/70	07:00:59.83	43.85	54.80

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
FOC	45.695	27.183	2182.2		274.2					ISC	bulletin
BAC	46.567	26.900	2198.3		265.2					ISC	bulletin
SOSN&	50.818	27.131	2212.0	269.6			493.1			CSE	record
VRI	45.870	26.725	2216.2		272.2					ISC	bulletin
CRA	48.283	25.933	2270.3		277.8					GS	bulletin
BUC	44.414	26.097	2283.4		281.2					ISC	bulletin
KOV	48.315	25.067	2334.5		284.2					GS	bulletin
CIN	37.600	28.087	2346.0		285.7					ISC	bulletin
CMP	45.268	25.038	2353.6		287.2					ISC	bulletin
EIL	29.550	34.950	2364.5		288.2					ISC	bulletin
PVL	43.217	25.333	2367.3		290.2					ISC	bulletin
NVS	54.850	83.266	2376.3		287.8					GS	bulletin
NVS	54.850	83.266	2376.3		287.8					GS	record
EZN	39.826	26.325	2391.4		290.0					ISC	bulletin
RAK	48.055	24.198	2398.9		291.2					GS	bulletin
ARG	36.216	28.126	2412.8		291.5					ISC	bulletin
PUL	59.773	30.324	2417.5		291.7					GS	record
PRK	39.246	26.272	2418.4		292.0					ISC	bulletin
MZG	48.514	23.514	2449.7		295.7					GS	bulletin
ELT	53.253	86.277	2519.1		300.7					GS	record
SOF	42.685	23.334	2539.3		307.2					ISC	bulletin
HLW	29.858	31.342	2585.5		309.2					ISC	bulletin
PLG	40.374	23.446	2602.4		309.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/12/70	07:00:59.83	43.85	54.80

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NDI	28.683	77.217	2605.1		311.2					ISC	bulletin
SSR	44.863	21.743	2616.5		310.2					ISC	bulletin
JOS	48.496	20.539	2669.2		315.8					ISC	bulletin
ATH	37.972	23.717	2677.9		316.2					ISC	bulletin
NIE	49.419	20.313	2684.3		316.0					ISC	bulletin
SKO	41.972	21.439	2710.2		318.9					ISC	bulletin
KRA	50.058	19.940	2712.0		318.8					ISC	bulletin
PSZ	47.919	19.894	2720.0		317.2					ISC	bulletin
NUR	60.509	24.651	2727.1		318.8					ISC	bulletin
KJN	64.085	27.712	2822.0		327.2					ISC	bulletin
JAN	39.657	20.851	2837.4		329.8					ISC	bulletin
SRO	47.813	18.313	2838.8		331.6					ISC	bulletin
TIR	41.348	19.865	2855.5		330.2					ISC	bulletin
VLS	38.177	20.590	2919.7		336.1					ISC	bulletin
APA	67.558	33.442	2924.4		335.2					GS	bulletin
BRA	48.168	17.105	2925.3		334.7					ISC	bulletin
OUL	65.085	25.896	2959.9		337.1					ISC	bulletin
VIE	48.248	16.362	2979.5		341.4					ISC	bulletin
VKA	48.265	16.318	2982.6		341.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/23/70	07:00:59.76	44.025	54.933

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NUKU&	42.100	60.483	499.3	66.5		77.0	123.3		140.0	CSE	record
SHE	40.646	48.642	638.9	86.2						GS	bulletin
ZER&	41.573	64.277	809.8	104.4		132.0	190.6		229.6	CSE	record
DUS	42.080	44.700	859.5	114.2						GS	bulletin
GOR	41.980	44.130	907.7	118.6						GS	bulletin
STE	41.000	44.370	928.8	120.4						GS	bulletin
SRI	36.758	49.383	932.5	117.7						ISC	bulletin
MSH	36.311	59.588	942.0	122.4						ISC	bulletin
TEH	35.738	51.386	967.2	124.7						ISC	bulletin
TAB	38.068	46.327	978.1	127.7						ISC	bulletin
ABS	41.750	42.810	1019.7	132.6						GS	bulletin
URG&	39.388	67.262	1144.9	144.9			260.9		326.9	CSE	record
SOC	43.583	39.720	1221.9	157.2						GS	bulletin
DOLG&	55.350	61.380	1340.1	170.5			307.9		377.9	CSE	record
NAM	41.000	71.660	1410.6	180.6						GS	bulletin
NIP&	56.230	61.090	1424.5	181.1			321.7		389.8	CSE	record
KKOR&	52.912	69.025	1430.0	182.4						CSE	record
FRG	40.370	71.780	1444.6	183.5						GS	bulletin
KAVO&	56.530	61.350	1461.4	185.6			327.8			CSE	record
BRV	53.083	70.250	1507.1	191.6						GS	bulletin
FEO	45.019	35.390	1551.9	196.2						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/23/70	07:00:59.76	44.025	54.933

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SUFI&	40.057	73.553	1597.3	201.9			361.1	381.6	454.3	CSE	record
KBL	34.541	69.043	1603.0	202.3						ISC	bulletin
SHI	29.644	52.526	1607.4	203.5						ISC	bulletin
YAL	44.487	34.155	1653.7	208.2						GS	bulletin
FABK	43.147	76.447	1733.1	217.2						GS	bulletin
KAS	41.372	33.767	1751.9	220.7						ISC	bulletin
AAA	43.267	76.950	1770.9	225.1						GS	bulletin
TLG&	43.238	77.225	1793.4	224.8	241.0		407.0	423.4	508.8	CSE	record
AAB	43.230	77.230	1793.9	224.8						GS	bulletin
OBN	55.115	36.568	1800.8	224.2			393.2		516.2	GS	record
KDSK	42.123	77.188	1816.8	229.7						GS	bulletin
KRM	42.987	78.275	1882.5	236.7						GS	bulletin
TEGR&	43.390	79.720	1989.1	248.2	254.5			460.4	571.8	CSE	record
KSA	33.823	35.890	1991.5	249.2						ISC	bulletin
BKOL&	42.633	79.983	2027.1		254.6					CSE	record
GPA	40.289	30.309	2066.0		256.2					ISC	bulletin
ISK	41.066	29.059	2138.7		264.7					ISC	bulletin
IST	41.046	28.996	2144.4		265.2					ISC	bulletin
IAS	47.193	27.562	2150.1		264.2					ISC	bulletin
JER	31.772	35.197	2191.7		271.0			498.2		ISC	bulletin
BAC	46.567	26.900	2202.6		269.2					ISC	bulletin
SOSN&	50.818	27.131	2211.5	270.4	271.9		492.2		627.2	CSE	record
DMK	41.822	27.757	2219.1		273.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/23/70	07:00:59.76	44.025	54.933

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VRI	45.870	26.725	2221.3		273.2					ISC	bulletin
DRB	39.581	28.638	2227.1		274.4					ISC	bulletin
CRA	48.283	25.933	2272.7		278.6		506.6			GS	bulletin
BUC	44.414	26.097	2290.0		281.2					ISC	bulletin
KOV	48.315	25.067	2337.0		283.2			525.2		GS	bulletin
NVS	54.850	83.266	2355.5		287.3					GS	bulletin
NVS	54.850	83.266	2355.5		287.4			526.0		GS	record
CMP	45.268	25.038	2359.2		287.2					ISC	bulletin
CIN	37.600	28.087	2359.3		286.2					ISC	bulletin
EIL	29.550	34.950	2384.5		288.2			532.2		ISC	bulletin
RAK	48.055	24.198	2401.6		290.2			533.2		GS	bulletin
PUL	59.773	30.324	2407.6		292.2			530.2		GS	record
PRK	39.246	26.272	2429.9		292.5					ISC	bulletin
ELT	53.253	86.277	2499.2		300.3					GS	record
HLW	29.858	31.342	2604.2		309.0					ISC	bulletin
NDI	28.683	77.217	2606.7		310.7					ISC	bulletin
TIM	45.737	21.222	2647.5		315.6					ISC	bulletin
JOS	48.496	20.539	2671.5		316.1					ISC	bulletin
NIE	49.419	20.313	2685.6		316.2					ISC	bulletin
ATH	37.972	23.717	2689.7		317.2			592.2		ISC	bulletin
KRA	50.058	19.940	2712.8		319.2					ISC	bulletin
NUR	60.509	24.651	2717.9		319.2			584.2		ISC	bulletin
SKO	41.972	21.439	2718.4		320.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/23/70	07:00:59.76	44.025	54.933

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PSZ	47.919	19.894	2722.8		320.2					ISC	bulletin
KEC	46.912	19.698	2747.5		315.2					ISC	bulletin
VAM	35.407	24.200	2780.0		324.1			592.2		ISC	bulletin
KJN	64.085	27.712	2809.8		328.3			601.2		ISC	bulletin
PAT	38.236	21.747	2835.4		340.2					ISC	bulletin
JAN	39.657	20.851	2847.3		330.2					ISC	bulletin
APA	67.558	33.442	2909.3		336.2					GS	bulletin
BRA	48.168	17.105	2927.7		336.6					ISC	bulletin
VLS	38:177	20.590	2930.6		336.6					ISC	bulletin
OUL	65.085	25.896	2947.5		338.2					ISC	bulletin
VIE	48.248	16.362	2981.8		342.3					ISC	bulletin
VKA	48.265	16.318	2984.8		342.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/23/71	06:59:58.38	61.40 (?)	56.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	571.4	75.6		89.6	135.6		161.6	GS	record
KAVO&	56.530	61.350	617.5	80.5			142.0			CSE	record
NIP&	56.230	61.090	640.8	83.4						CSE	record
DOLG&	55.350	61.380	738.0	95.0		119.7	169.4			CSE	record
KKOR&	52.912	69.025	1218.0	152.9						CSE	record
BRV	53.083	70.250	1250.2	157.4						GS	bulletin
OBN	55.115	36.568	1340.1	171.0		215.6	300.6		383.6	GS	record
KJF	64.199	27.715	1472.8	186.6			335.6			ISC	bulletin
KJN	64.085	27.712	1473.2	186.6						ISC	bulletin
SOD	67.371	26.629	1554.6	197.1			356.6			ISC	bulletin
OUL	65.085	25.896	1560.1	197.2						ISC	bulletin
KEV	69.755	27.007	1612.8	202.9						ISC	bulletin
NUR	60.509	24.651	1695.2	212.3			375.6			ISC	bulletin
NRI	69.430	88.083	1700.9	212.6	221.2		386.6	405.1	499.6	GS	record
NVS	54.850	83.266	1736.4	214.6						GS	record
NVS	54.850	83.266	1736.4	214.6			393.1			GS	bulletin
KIR	67.840	20.417	1823.5	228.1						ISC	bulletin
UME	63.815	20.237	1840.6	228.6						ISC	bulletin
TRO	69.632	18.928	1910.9	238.8						ISC	bulletin
SEM	50.400	80.250	1919.4	234.3			424.8			GS	bulletin
ELT	53.253	86.277	2000.8	246.1			446.1			GS	bulletin
ELT	53.253	86.277	2000.8	246.1			446.6			GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/23/71	06:59:58.38	61.40 (?)	56.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UPP	59.858	17.627	2086.8	256.8			457.6			ISC	bulletin
SOSN&	50.818	27.131	2129.6	259.8	270.1		463.1		601.2	CSE	record
ZER&	41.573	64.277	2270.1	276.4						CSE	record
TAZH&	56.252	94.953	2272.9	276.0						CSE	record
HFS	60.134	13.696	2279.2	278.6						ISC	bulletin
GOR	41.980	44.130	2305.6		281.6					GS	bulletin
ALU	44.682	34.403	2340.6		284.6			534.6	670.6	GS	bulletin
ABS	41.750	42.810	2362.3		287.3					GS	bulletin
SHE	40.646	48.642	2363.2		287.6					GS	bulletin
YAL	44.487	34.155	2369.2		287.1					GS	bulletin
STE	41.000	44.370	2404.6		290.2					GS	bulletin
IAS	47.193	27.562	2408.5		289.7					ISC	bulletin
FABK	43.147	76.447	2432.3		292.7					GS	bulletin
KOV	48.315	25.067	2434.0		293.6			542.6		GS	bulletin
AAA	43.267	76.950	2438.8		293.5			542.5		GS	bulletin
KBS	78.918	11.924	2450.0		296.0					ISC	bulletin
TLG&	43.238	77.225	2451.8		294.3					CSE	record
KARK&	41.630	72.730	2462.4		296.3					CSE	record
KAT	39.028	56.270	2486.2		298.6					GS	bulletin
ERE	40.170	44.470	2491.2		297.6					GS	bulletin
MZG	48.514	23.514	2494.9		301.5			548.5	710.5	GS	bulletin
NAM	41.000	71.660	2496.7		299.8					GS	bulletin
KON	59.649	9.598	2511.1		301.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/23/71	06:59:58.38	61.40 (?)	56.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UER	51.563	94.087	2530.0		301.1					GS	record
TEGR&	43.390	79.720	2533.5		301.6					CSE	record
KRA	50.058	19.940	2556.2		306.3			557.6		ISC	bulletin
KDSK	42.123	77.188	2561.0		306.0					GS	bulletin
URG&	39.388	67.262	2561.2		304.0					CSE	record
VRI	45.870	26.725	2563.9		306.6					ISC	bulletin
FRG	40.370	71.780	2565.9		305.3			584.3		GS	bulletin
COP	55.683	12.433	2572.9		308.6					ISC	bulletin
NIE	49.419	20.313	2586.0		309.4					ISC	bulletin
BKOL&	42.633	79.983	2617.2		310.0					CSE	record
JOS	48.496	20.539	2647.3		314.4					ISC	bulletin
SUFI&	40.057	73.553	2650.1		313.3					CSE	record
TAB	38.068	46.327	2681.5		316.6					ISC	bulletin
KAS	41.372	33.767	2688.9		318.4					ISC	bulletin
BER	60.383	5.334	2693.1		319.6					ISC	bulletin
BRL	52.472	13.291	2733.3		329.6					ISC	bulletin
SRI	36.758	49.383	2779.1		326.0					ISC	bulletin
MASL&	53.523	101.558	2793.3		325.1					CSE	record
MASL&	53.523	101.558	2793.3		325.1					CSE	record
MSH	36.311	59.588	2797.4		334.6					ISC	bulletin
CLL	51.308	13.002	2830.4		329.6					ISC	bulletin
PRA	50.070	14.433	2844.8		330.6					ISC	bulletin
PRU	49.988	14.542	2845.1		331.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/23/71	06:59:58.38	61.40 (?)	56.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRA	48.168	17.105	2850.7		334.6					ISC	bulletin
PVL	43.217	25.333	2867.4		338.6					ISC	bulletin
TEH	35.738	51.386	2871.0		334.4					ISC	bulletin
VIE	48.248	16.362	2883.1		334.6					ISC	bulletin
VKA	48.265	16.318	2884.1		335.6					ISC	bulletin
ISK	41.066	29.059	2905.5		335.6					ISC	bulletin
GLP	40.289	30.309	2929.6		337.1					ISC	bulletin
MOX	50.665	11.616	2950.8		339.4					ISC	bulletin
KHC	49.131	13.578	2961.0		340.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/02/71	17:00:01.13	67.283	63.467

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	1033.9	136.4		169.4	233.9		288.9	GS	record
VISK&	57.850	49.020	1280.3	162.9			287.7			CSE	record
DOLG&	55.350	61.380	1333.8	169.7			307.3			CSE	record
KEV	69.755	27.007	1492.3	185.9			331.9			ISC	bulletin
SOD	67.371	26.629	1562.0	192.6			339.9			ISC	bulletin
BRV	53.083	70.250	1623.3	203.1						GS	bulletin
KJF	64.199	27.715	1650.7	205.0			361.9			ISC	bulletin
KJN	64.085	27.712	1656.7	205.0						ISC	bulletin
OUL	65.085	25.896	1684.3	209.6			372.9			ISC	bulletin
NVS	54.850	83.266	1733.0	214.3			384.7		486.9	GS	record
KIR	67.840	20.417	1798.5	222.0			396.9			ISC	bulletin
TRO	69.632	18.928	1802.8	224.1						ISC	bulletin
PUL	59.773	30.324	1818.9	230.9						GS	record
OBN	55.115	36.568	1952.8	239.9			429.9		556.9	GS	record
ELT	53.253	86.277	1984.4	245.3						GS	bulletin
ELT	53.253	86.277	1984.4	247.9			439.9		566.6	GS	record
UME	63.815	20.237	1991.2	244.2						ISC	bulletin
NUR	60.509	24.651	2009.0	245.9			435.9			ISC	bulletin
UPP	59.858	17.627	2357.3	285.2						ISC	bulletin
UER	51.563	94.087	2418.7	292.9						GS	record
HFS	60.134	13.696	2506.8		300.9					ISC	bulletin
NOR	81.600	-16.683	2541.0		303.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/02/71	17:00:01.13	67.283	63.467

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TLG&	43.238	77.225	2799.2		327.0					CSE	record
ZER&	41.573	64.277	2860.2		332.0					CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/71	17:00:01.38	64.167	55.267

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VISK&	57.850	49.020	779.7	102.3		127.5	184.9			CSE	record
SVE	56.827	60.637	868.4	114.6		141.6	202.6		247.6	GS	record
ARU	56.416	58.570	882.1	115.1		137.1	202.6		244.1	GS	record
DOLG&	55.350	61.380	1039.1	133.4			234.2		271.7	CSE	record
KJF	64.199	27.715	1328.7	167.6						ISC	bulletin
KJN	64.085	27.712	1331.6	167.6						ISC	bulletin
SOD	67.371	26.629	1346.2	169.8			290.6			ISC	bulletin
KEV	69.755	27.007	1365.9	171.6			296.6			ISC	bulletin
PUL	59.773	30.324	1385.6	173.6			305.6		399.6	GS	record
OUL	65.085	25.896	1395.7	176.4			309.6			ISC	bulletin
OBN	55.115	36.568	1448.4	181.6		231.6	319.6		412.6	GS	record
KKOR&	52.912	69.025	1480.2	187.1			333.9		421.7	CSE	record
BRV	53.083	70.250	1501.8	190.7					433.0	GS	bulletin
NRI	69.430	88.083	1534.5	195.7				353.2		GS	record
KIR	67.840	20.417	1610.3	200.3			352.6			ISC	bulletin
NUR	60.509	24.651	1620.2	199.6			354.6			ISC	bulletin
TRO	69.632	18.928	1673.5	208.4						ISC	bulletin
EPN&	58.830	25.500	1673.9	208.4			363.9		464.9	CSE	record
UME	63.815	20.237	1693.2	210.1			369.6			ISC	bulletin
YAKT&	56.730	25.750	1800.6	222.3			404.1		501.3	CSE	record
NVS	54.850	83.266	1870.4	234.8			414.6		541.6	GS	record
UPP	59.858	17.627	1996.5	244.2			436.6			ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/71	17:00:01.38	64.167	55.267

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SEM	50.400	80.250	2121.5	261.9						GS	bulletin
ELT	53.253	86.277	2135.1		264.2					GS	bulletin
ELT	53.253	86.277	2135.1		265.6					GS	record
KBS	78.918	11.924	2146.7		265.9					ISC	bulletin
HFS	60.134	13.696	2171.5	264.6						ISC	bulletin
VOLV&	48.120	29.590	2361.5		285.3					CSE	record
BERZ&	47.220	30.930	2396.7		288.3			536.3		CSE	record
MARN&	47.660	27.840	2473.9		295.6			532.8		CSE	record
CRA	48.283	25.933	2493.8		291.2					GS	bulletin
COP	55.683	12.433	2515.2		300.9					ISC	bulletin
KOV	48.315	25.067	2527.2		300.6					GS	bulletin
ALU	44.682	34.403	2528.7		301.6					GS	bulletin
IAS	47.193	27.562	2529.0		303.6					ISC	bulletin
DUS	42.080	44.700	2547.9		305.6					GS	bulletin
YAL	44.487	34.155	2556.4		305.6					GS	bulletin
BER	60.383	5.334	2557.0		305.4					ISC	bulletin
ZER&	41.573	64.277	2578.6		308.4					CSE	record
KRA	50.058	19.940	2598.8		308.6					ISC	bulletin
BAC	46.567	26.900	2614.7		311.6					ISC	bulletin
ABS	41.750	42.810	2618.2		310.6					GS	bulletin
UER	51.563	94.087	2635.6		314.0					GS	record
SHE	40.646	48.642	2650.4		313.6					GS	bulletin
AAA	43.267	76.950	2698.8		319.8					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/71	17:00:01.38	64.167	55.267

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TLG&	43.238	77.225	2710.6		320.1					CSE	record
NOR	81.600	-16.683	2732.7		320.6					ISC	bulletin
KARK&	41.630	72.730	2746.0		323.1					CSE	record
TEGR&	43.390	79.720	2778.7		325.2					CSE	record
NAM	41.000	71.660	2785.5		328.8					GS	bulletin
CMP	45.268	25.038	2812.7		329.6					ISC	bulletin
CLL	51.308	13.002	2820.1		327.7					ISC	bulletin
PRA	50.070	14.433	2853.7		331.6					ISC	bulletin
FRG	40.370	71.780	2855.3		333.1					GS	bulletin
PRU	49.988	14.542	2855.5		331.2					ISC	bulletin
BKOL&	42.633	79.983	2863.8		330.6					CSE	record
BKOL&	42.633	79.983	2863.8		332.6					CSE	record
KAS	41.372	33.767	2887.7		333.1					ISC	bulletin
BRA	48.168	17.105	2891.9		333.6					ISC	bulletin
VIE	48.248	16.362	2919.1		337.6					ISC	bulletin
SUFI&	40.057	73.553	2933.3		338.7					CSE	record
MOX	50.665	11.616	2938.8		337.1					ISC	bulletin
TAB	38.068	46.327	2961.1		336.6					ISC	bulletin
KHC	49.131	13.578	2973.1		341.4					ISC	bulletin
PVL	43.217	25.333	2998.4		344.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/19/71	11:00:01.08	57.508	42.643

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VISK&	57.850	49.020	382.0	54.2		62.5	100.5		112.6	CSE	record
YUR&	59.100	49.760	452.9	62.9					131.5	CSE	record
OBN	55.115	36.568	460.3	64.1		73.9	114.9		131.9	GS	record
PUL	59.773	30.324	756.9			122.9			208.9	GS	record
LUNK&	57.750	29.200	801.9	104.4		129.5			219.0	CSE	record
ARU	56.416	58.570	973.7	124.6		157.1	218.3		273.6	GS	record
NUR	60.509	24.651	1082.1	138.5			242.9			ISC	bulletin
SVE	56.827	60.637	1087.5	138.9		168.9	246.9		300.9	GS	record
KJN	64.085	27.712	1089.4	140.6			248.9			ISC	bulletin
KJF	64.199	27.715	1096.7	140.6			248.9			ISC	bulletin
DOLG&	55.350	61.380	1176.1	152.9			268.0		332.5	CSE	record
OUL	65.085	25.896	1225.0	154.9			277.9			ISC	bulletin
SOD	67.371	26.629	1366.6	171.7			300.9			ISC	bulletin
UME	63.815	20.237	1401.3	176.6			305.9			ISC	bulletin
UPP	59.858	17.627	1464.7	182.7			323.9			ISC	bulletin
ALU	44.682	34.403	1535.3	193.9						GS	bulletin
KEV	69.755	27.007	1559.0	195.8			340.9			ISC	bulletin
MZG	48.514	23.514	1617.3	202.1					469.1	GS	bulletin
HFS	60.134	13.696	1682.9	207.4						ISC	bulletin
NIE	49.419	20.313	1721.7	212.9						ISC	bulletin
KKOR&	52.912	69.025	1741.9	217.8			402.0	402.0	484.3	CSE	record
LENG&	53.517	71.583	1865.0	230.4			411.0	422.8	524.8	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/19/71	11:00:01.08	57.508	42.643

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KON	59.649	9.598	1916.1	233.8						ISC	bulletin
SHE	40.646	48.642	1922.1		244.4					GS	bulletin
PRU	49.988	14.542	2013.6	248.9						ISC	bulletin
CLL	51.308	13.002	2023.9	245.9						ISC	bulletin
KHC	49.131	13.578	2126.0	260.9						ISC	bulletin
MOX	50.665	11.616	2144.3	262.9						ISC	bulletin
GRF	49.692	11.222	2227.9	273.9						ISC	bulletin
LJU	46.043	14.533	2294.2		281.9					ISC	bulletin
NRI	69.430	88.083	2539.3		304.4					GS	record
WLS	48.413	7.354	2540.0		303.9					ISC	bulletin
SEM	50.400	80.250	2553.0		303.5					GS	bulletin
EGL	55.862	-2.738	2733.9		321.0					ISC	bulletin
ELT	53.253	86.277	2754.9		321.5					GS	bulletin
EBL	55.773	-3.044	2755.4		323.1					ISC	bulletin
KARK&	41.630	72.730	2760.8		323.7					CSE	record
EBH	56.248	-3.508	2761.7		320.0					ISC	bulletin
EKA	55.333	-3.159	2781.6		324.6					ISC	bulletin
ESK	55.317	-3.205	2785.0		324.9					ISC	bulletin
LNS	45.289	6.915	2786.1		323.9					ISC	bulletin
TLG&	43.238	77.225	2877.6		333.5					CSE	record
MNY	44.961	5.691	2881.9		333.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/04/71	10:00:00.14	61.358	48.092

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
YUR&	59.100	49.760	267.9	39.5		43.4	71.5		80.7	CSE	record
VISK&	57.850	49.020	394.1	55.5		63.2	98.5		109.0	CSE	record
ARU	56.416	58.570	815.3	107.4		131.9	187.3		224.9	GS	record
SVE	56.827	60.637	875.9	115.9		142.9	201.9		246.9	GS	record
OBN	55.115	36.568	967.4	124.7		155.9	219.9		274.9	GS	record
PUL	59.773	30.324	986.8	127.4			221.9		280.9	GS	record
DOLG&	55.350	61.380	1022.4	131.5			229.9		282.5	CSE	record
KJN	64.085	27.712	1080.4	139.3						ISC	bulletin
KJF	64.199	27.715	1081.9	139.3			243.9			ISC	bulletin
LUNK&	57.750	29.200	1136.1	143.3			250.8		320.2	CSE	record
OUL	65.085	25.896	1183.2	151.5			268.9			ISC	bulletin
SOD	67.371	26.629	1224.5	155.6						ISC	bulletin
NUR	60.509	24.651	1267.2	159.9			282.9			ISC	bulletin
KEV	69.755	27.007	1337.9	170.3			297.9			ISC	bulletin
UME	63.815	20.237	1444.9	181.9			320.9			ISC	bulletin
KKOR&	52.912	69.025	1566.1	197.6						CSE	record
TRO	69.632	18.928	1610.4	202.1						ISC	bulletin
LENG&	53.517	71.583	1644.6	205.2						CSE	record
UPP	59.858	17.627	1661.1	205.7			361.9			ISC	bulletin
HFS	60.134	13.696	1858.5	227.9						ISC	bulletin
KOV	48.315	25.067	2050.7	250.9						GS	bulletin
ALU	44.682	34.403	2059.4	253.9						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/04/71	10:00:00.14	61.358	48.092

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KON	59.649	9.598	2092.2	255.9						ISC	bulletin
MZG	48.514	23.514	2102.8	258.0						GS	bulletin
NVS	54.850	83.266	2164.6	266.9						GS	bulletin
NIE	49.419	20.313	2176.6		269.9					ISC	bulletin
ABS	41.750	42.810	2208.5		272.9					GS	bulletin
KBS	78.918	11.924	2306.3		279.0					ISC	bulletin
CLL	51.308	13.002	2400.5		288.9					ISC	bulletin
PRA	50.070	14.433	2419.4		290.9					ISC	bulletin
PRU	49.988	14.542	2420.1		291.9					ISC	bulletin
ELT	53.253	86.277	2428.0		293.0					GS	bulletin
PVL	43.217	25.333	2517.0		304.9					ISC	bulletin
MOX	50.665	11.616	2520.7		301.9					ISC	bulletin
KHC	49.131	13.578	2536.7		303.4					ISC	bulletin
DMK	41.822	27.757	2564.2		306.9					ISC	bulletin
GRF	49.692	11.222	2614.9		312.9					ISC	bulletin
KDZ	41.650	25.417	2667.2		318.9					ISC	bulletin
LJU	46.043	14.533	2743.2		321.9					ISC	bulletin
KARK&	41.630	72.730	2745.6		323.1					CSE	record
TLG&	43.238	77.225	2784.2		326.0					CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/22/71	05:00:01.0	51.60	54.45

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	599.6	81.7		97.2	143.2		171.2	GS	record
SVE	56.827	60.637	707.0	94.5		113.0	166.0		203.0	GS	record
KKOR&	52.912	69.025	1003.4	129.4		160.6	219.6		280.7	CSE	record
OBN	55.115	36.568	1248.3	161.6		204.0	281.5		357.0	GS	record
SHE	40.646	48.642	1295.2	168.0						GS	bulletin
ZUG	42.400	41.800	1398.8	179.0						GS	bulletin
KAT	39.028	56.270	1402.7	180.0			316.0			GS	bulletin
ABS	41.750	42.810	1406.4	179.0						GS	bulletin
CHM	42.319	69.603	1540.3	193.9						GS	bulletin
ALU	44.682	34.403	1669.3	211.0						GS	bulletin
YAL	44.487	34.155	1697.8	213.0						GS	bulletin
TEH	35.738	51.386	1776.9	217.0						ISC	bulletin
SEM	50.400	80.250	1805.1	224.5						GS	bulletin
FRG	40.370	71.780	1822.7	229.0						GS	bulletin
AAA	43.267	76.950	1920.5		244.0					GS	bulletin
KAS	41.372	33.767	1939.9		243.4					ISC	bulletin
TLG&	43.238	77.225	1940.4	242.0	252.1		439.0	450.0	554.4	CSE	record
NVS	54.850	83.266	1942.4	242.0						GS	bulletin
NVS	54.850	83.266	1942.4	242.2						GS	record
IAS	47.193	27.562	1998.1		250.0					ISC	bulletin
KER	34.352	47.106	2002.4		254.0					ISC	bulletin
KHO	37.480	71.530	2061.8		257.2					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/22/71	05:00:01.0	51.60	54.45

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MGN	40.925	32.181	2071.3		251.0					ISC	bulletin
BAC	46.567	26.900	2073.1							ISC	bulletin
BAC	46.567	26.900	2073.1		258.0					ISC	bulletin
NUR	60.509	24.651	2078.5	256.0						ISC	bulletin
KJN	64.085	27.712	2081.7	257.9						ISC	bulletin
KJF	64.199	27.715	2087.8	257.9			465.0			ISC	bulletin
VRI	45.870	26.725	2119.9		265.0			501.0		ISC	bulletin
KOV	48.315	25.067	2123.1		263.0					GS	bulletin
ELT	53.253	86.277	2153.2		265.2				620.1	GS	record
BKOL&	42.633	79.983	2161.2		270.2					CSE	record
OUL	65.085	25.896	2211.9		271.8					ISC	bulletin
MZG	48.514	23.514	2222.7		275.1					GS	bulletin
KBL	34.541	69.043	2224.8		275.0					ISC	bulletin
BUC	44.414	26.097	2241.9		278.0					ISC	bulletin
ISK	41.066	29.059	2259.0		279.0					ISC	bulletin
IST	41.046	28.996	2264.5		279.4					ISC	bulletin
CMP	45.268	25.038	2267.3		282.0					ISC	bulletin
DMK	41.822	27.757	2291.7		282.5					ISC	bulletin
SOD	67.371	26.629	2319.7		284.1					ISC	bulletin
PVL	43.217	25.333	2364.5		234.0					ISC	bulletin
WRS	34.150	71.400	2366.7		288.4					ISC	bulletin
DRB	39.581	28.638	2394.1		291.7					ISC	bulletin
UME	63.815	20.237	2405.1		291.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/22/71	05:00:01.0	51.60	54.45

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRA	50.058	19.940	2412.9		292.3					ISC	bulletin
SHI	29.644	52.526	2439.8		296.1					ISC	bulletin
UPP	59.858	17.627	2448.9		296.2					ISC	bulletin
KDZ	41.650	25.417	2458.5		298.0					ISC	bulletin
KEV	69.755	27.007	2471.4		298.4					ISC	bulletin
KSA	33.823	35.890	2473.8		300.0					ISC	bulletin
NIL	33.650	73.252	2501.8		300.5					ISC	bulletin
EZN	39.826	26.325	2524.7		304.6					ISC	bulletin
KIR	67.840	20.417	2572.4		307.5					ISC	bulletin
MNL	33.147	73.750	2573.5		308.7					ISC	bulletin
CIN	37.600	28.087	2581.0		309.0					ISC	bulletin
QUE	30.188	66.950	2588.5		310.4					ISC	bulletin
NRI	69.430	88.083	2645.2		313.5					GS	record
HFS	60.134	13.696	2669.7		317.0					ISC	bulletin
BRA	48.168	17.105	2678.7		319.0					ISC	bulletin
UER	51.563	94.087	2711.4		318.5					GS	record
TRO	69.632	18.928	2720.3		320.2					ISC	bulletin
VKA	48.265	16.318	2728.7		323.4					ISC	bulletin
PRU	49.988	14.542	2782.2		327.0					ISC	bulletin
PRA	50.070	14.433	2786.6		327.0					ISC	bulletin
CLL	51.308	13.002	2840.1		330.8					ISC	bulletin
KHC	49.131	13.578	2880.4		334.9					ISC	bulletin
KON	59.649	9.598	2898.8		335.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/22/71	**05:00:01.0**	**51.60**	**54.45**

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
EIL	29.550	34.950	2928.7		337.5					ISC	bulletin
LJU	46.043	14.533	2954.0		342.0					ISC	bulletin
MOX	50.665	11.616	2954.6		341.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/22/71	06:59:59.0	47.897	48.133

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ABS	41.750	42.810	801.0	106.8						GS	bulletin
SHE	40.646	48.642	805.7	108.0						GS	bulletin
ERE	40.170	44.470	906.0	119.0						GS	bulletin
TAB	38.068	46.327	1100.3	145.5						ISC	bulletin
ALU	44.682	34.403	1113.7	143.0						GS	bulletin
OBN	55.115	36.568	1132.0	146.0			262.0		322.0	GS	record
YAL	44.487	34.155	1140.4	145.8						GS	bulletin
ARU	56.416	58.570	1183.2	148.2			270.2		324.2	GS	record
SVE	56.827	60.637	1303.7	165.0			299.0		359.0	GS	record
KAS	41.372	33.767	1346.1	172.0						ISC	bulletin
TEH	35.738	51.386	1375.0	176.5						ISC	bulletin
KER	34.352	47.106	1504.5	194.4						ISC	bulletin
IAS	47.193	27.562	1544.4	194.0						ISC	bulletin
KKOR&	52.912	69.025	1578.2	197.5						CSE	record
MSH	36.311	59.588	1592.2	201.4						ISC	bulletin
BAC	46.567	26.900	1607.9	201.0						ISC	bulletin
VRI	45.870	26.725	1640.1	206.0						ISC	bulletin
ISK	41.066	29.059	1688.4	212.5						ISC	bulletin
IST	41.046	28.996	1694.1	212.5						ISC	bulletin
DMK	41.822	27.757	1737.5	221.0						ISC	bulletin
PUL	59.773	30.324	1754.4	218.5			393.0		488.0	GS	record
CMP	45.268	25.038	1785.2		229.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/22/71	06:59:59.0	47.897	48.133

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DRB	39.581	28.638	1812.2	227.0						ISC	bulletin
MZG	48.514	23.514	1821.5	227.7						GS	bulletin
PVL	43.217	25.333	1844.8	233.0						ISC	bulletin
KSA	33.823	35.890	1865.2		237.0					ISC	bulletin
DEV	45.883	22.903	1925.0	238.0						ISC	bulletin
EZN	39.826	26.325	1957.4		246.0					ISC	bulletin
PRK	39.246	26.272	1998.1		250.6					ISC	bulletin
SOF	42.685	23.334	2017.4		251.0					ISC	bulletin
NIE	49.419	20.313	2042.9	252.2						ISC	bulletin
KARK&	41.630	72.730	2055.1	255.0						CSE	record
FRG	40.370	71.780	2055.7	255.3					581.3	GS	bulletin
NUR	60.509	24.651	2056.1	250.9			446.0			ISC	bulletin
SHI	29.644	52.526	2057.8		256.3					ISC	bulletin
KRA	50.058	19.940	2063.4	252.0						ISC	bulletin
TOSK&	41.845	73.060	2068.2		258.5					CSE	record
ARG	36.216	28.126	2090.2		260.0					ISC	bulletin
JER	31.772	35.197	2095.5		262.0					ISC	bulletin
KJN	64.085	27.712	2184.8	266.3						ISC	bulletin
SKO	41.972	21.439	2192.3		270.8					ISC	bulletin
KJF	64.199	27.715	2193.8	266.3			474.0			ISC	bulletin
SRO	47.813	18.313	2215.4		271.0					ISC	bulletin
PTL	38.049	23.865	2245.2		276.5					ISC	bulletin
ATH	37.972	23.717	2260.7		277.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/22/71	06:59:59.0	47.897	48.133

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KBL	34.541	69.043	2280.2		281.0					ISC	bulletin
BRA	48.168	17.105	2296.2		272.0					ISC	bulletin
TLG&	43.238	77.225	2312.0		282.7					CSE	record
OUL	65.085	25.896	2325.2		281.5					ISC	bulletin
TIR	41.348	19.865	2340.4		283.0					ISC	bulletin
VIE	48.248	16.362	2348.7		286.9					ISC	bulletin
VKA	48.265	16.318	2351.5		286.9					ISC	bulletin
JAN	39.657	20.851	2360.8		288.7					ISC	bulletin
UPP	59.858	17.627	2373.1		287.5					ISC	bulletin
VAM	35.407	24.200	2409.2		291.0					ISC	bulletin
ZAG	45.829	15.994	2441.0		296.0					ISC	bulletin
PRU	49.988	14.542	2448.6		295.7					ISC	bulletin
PRA	50.070	14.433	2455.1		297.5					ISC	bulletin
HLW	29.858	31.342	2461.0		297.0					ISC	bulletin
VLS	38.177	20.590	2469.6		297.0					ISC	bulletin
SOD	67.371	26.629	2489.7		297.2					ISC	bulletin
KHC	49.131	13.578	2532.1		303.8					ISC	bulletin
NVS	54.850	83.266	2533.1		304.0					GS	bulletin
CLL	51.308	13.002	2540.4		303.6					ISC	bulletin
LJU	46.043	14.533	2542.3		305.0					ISC	bulletin
BKOL&	42.633	79.983	2544.8		304.1					CSE	record
COP	55.683	12.433	2575.3		306.7					ISC	bulletin
HFS	60.134	13.696	2590.9		307.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/22/71	06:59:59.0	47.897	48.133

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MOX	50.665	11.616	2645.1		313.6					ISC	bulletin
KEV	69.755	27.007	2689.1		316.5					ISC	bulletin
GRF	49.692	11.222	2689.4		318.8					ISC	bulletin
KIR	67.840	20.417	2712.8		318.4					ISC	bulletin
FUR	48.163	11.275	2719.9		321.0					ISC	bulletin
ELT	53.253	86.277	2730.0		320.1					GS	bulletin
HAM	53.465	9.925	2733.1		322.0					ISC	bulletin
KON	59.649	9.598	2801.6		325.9					ISC	bulletin
RMP	41.811	12.702	2850.9		331.3					ISC	bulletin
STU	48.772	9.195	2854.3		331.2					ISC	bulletin
TRO	69.632	18.928	2889.9		333.4					ISC	bulletin
KRL	49.011	8.412	2904.3		336.4					ISC	bulletin
BUH	48.676	8.228	2925.9		338.0					ISC	bulletin
BNS	50.964	7.176	2949.3		339.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/11/72	06:00:01.92	37.35	62.05

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MSH	36.311	59.588	247.6	39.7						ISC	bulletin
SAM	39.660	66.950	497.5	68.1					142.1	GS	bulletin
KBL	34.541	69.043	702.3	96.1						ISC	bulletin
KHO	37.480	71.530	837.6	110.1						GS	bulletin
FRG	40.370	71.780	906.6	118.6						GS	bulletin
QUE	30.188	66.950	912.8	123.3						ISC	bulletin
NAM	41.000	71.660	921.9	120.1						GS	bulletin
MUR	38.370	73.930	1049.1	136.5						GS	bulletin
NIL	33.650	73.252	1093.3	143.1						ISC	bulletin
MNL	33.147	73.750	1159.3	150.9						ISC	bulletin
TLG&	43.238	77.225	1441.3	183.3			323.8		403.7	CSE	record
DUS	42.080	44.700	1571.9	200.1						GS	bulletin
BKOL&	42.633	79.983	1633.6	207.5			369.3		464.3	CSE	record
DDI	30.323	78.056	1667.7	211.1						ISC	bulletin
ABS	41.750	42.810	1717.6	218.1						GS	bulletin
BRV	53.083	70.250	1858.2	230.1			408.1			GS	bulletin
SVE	56.827	60.637	2165.5	266.6					623.1	GS	record
POO	18.529	73.849	2377.2		291.1					ISC	bulletin
YAL	44.487	34.155	2462.2		297.1					GS	bulletin
NVS	54.850	83.266	2521.0		301.3					GS	record
ELT	53.253	86.277	2568.5		306.6					GS	record
CHA	26.833	87.167	2625.8		314.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/11/72	06:00:01.92	37.35	62.05

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
EIL	29.550	34.950	2648.1		315.6					ISC	bulletin
HYB	17.417	78.553	2731.1		321.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/09/72	07:00:01.25	49.80 (?)	35.40 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
OBN	55.115	36.568	596.3	81.2		96.8	144.8		169.8	GS	record
MZG	48.514	23.514	876.9	117.4						GS	bulletin
CMP	45.268	25.038	926.5	128.8						ISC	bulletin
KAS	41.372	33.767	944.2	120.4						ISC	bulletin
PVL	43.217	25.333	1061.3	139.8						ISC	bulletin
NIE	49.419	20.313	1088.4	140.8						ISC	bulletin
KRA	50.058	19.940	1107.5	142.8						ISC	bulletin
KDZ	41.650	25.417	1190.1	153.8						ISC	bulletin
NUR	60.509	24.651	1370.3	176.2			312.8			ISC	bulletin
PRU	49.988	14.542	1492.7	187.8						ISC	bulletin
BRG	50.873	13.943	1525.6	192.8						ISC	bulletin
KHC	49.131	13.578	1576.5	200.8						ISC	bulletin
CLL	51.308	13.002	1588.5	198.8						ISC	bulletin
UPP	59.858	17.627	1588.9	200.8						ISC	bulletin
LJU	46.043	14.533	1607.0	211.8						ISC	bulletin
KJF	64.199	27.715	1666.4	211.0			374.8			ISC	bulletin
MOX	50.665	11.616	1691.0	213.3						ISC	bulletin
ARU	56.416	58.570	1705.2	212.8			378.8	397.3	474.8	GS	record
HFS	60.134	13.696	1788.6	222.8						ISC	bulletin
UME	63.815	20.237	1803.4	225.2						ISC	bulletin
SVE	56.827	60.637	1839.6	228.8			411.8	421.8	521.8	GS	record
NAO	60.824	10.832	1963.5	241.8						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/09/72	07:00:01.25	49.80 (?)	35.40 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KON	59.649	9.598	1970.4	242.8						ISC	bulletin
SOD	67.371	26.629	2017.0	249.9			449.8			ISC	bulletin
CDF	48.412	7.276	2045.3	256.8						ISC	bulletin
KIR	67.840	20.417	2173.2	268.2						ISC	bulletin
LNS	45.289	6.915	2185.7	269.5						ISC	bulletin
DOU	50.096	4.594	2193.6	274.3						ISC	bulletin
BER	60.383	5.334	2221.7	273.7						ISC	bulletin
KEV	69.755	27.007	2266.7		278.8			508.8		ISC	bulletin
SPF	43.564	6.697	2284.1		281.3					ISC	bulletin
LRG	43.455	6.360	2313.8		281.8					ISC	bulletin
LOR	47.268	3.859	2326.6		284.4					ISC	bulletin
LBF	46.984	3.977	2328.4		283.9					ISC	bulletin
SSF	47.062	3.506	2359.4		286.8					ISC	bulletin
TRO	69.632	18.928	2376.4		289.0					ISC	bulletin
GRC	47.296	3.074	2381.9		289.2					ISC	bulletin
TCF	46.288	2.210	2482.0		299.2					ISC	bulletin
LSF	46.250	1.529	2532.4		304.8					ISC	bulletin
DUR	54.768	-1.585	2550.2		302.8					ISC	bulletin
SSC	48.584	-0.108	2565.1		307.4					ISC	bulletin
FLN	48.763	-0.482	2586.0		309.2					ISC	bulletin
EGL	55.862	-2.738	2619.0		310.8					ISC	bulletin
GRR	48.388	-0.858	2624.5		312.1					ISC	bulletin
EDU	56.548	-3.014	2635.4		314.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/09/72	07:00:01.25	49.80 (?)	35.40 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MFF	46.602	-0.146	2638.3		304.4					ISC	bulletin
EBL	55.773	-3.044	2638.4		312.8					ISC	bulletin
EKA	55.333	-3.159	2647.6		314.0					ISC	bulletin
LPF	48.032	-1.041	2649.4		314.2					ISC	bulletin
ESK	55.317	-3.205	2650.6		314.1					ISC	bulletin
SHI	29.644	52.526	2658.5		309.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/20/72	03:00:00.01	49.400	48.142

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
STE	41.000	44.370	978.0	128.0						GS	bulletin
OBN	55.115	36.568	1011.4	134.0		162.9	224.0		288.0	GS	record
ARU	56.416	58.570	1046.7	133.8		165.3	239.8		291.8	GS	record
SVE	56.827	60.637	1171.8	148.0		184.5	264.0		328.0	GS	record
TAB	38.068	46.327	1265.9	165.0						ISC	bulletin
KKOR&	52.912	69.025	1505.1	188.7			338.3	347.7	418.5	CSE	record
TEH	35.738	51.386	1538.4	196.0						ISC	bulletin
IAS	47.193	27.562	1540.1	192.0						ISC	bulletin
BRV	53.083	70.250	1588.9	198.5						GS	bulletin
MAKI&	52.570	70.617	1608.7	201.2			357.3			CSE	record
ALAB&	53.600	70.900	1638.6	204.2			363.7	380.5	460.7	CSE	record
VRI	45.870	26.725	1648.8	206.0						ISC	bulletin
KER	34.352	47.106	1671.2	214.5						ISC	bulletin
MSH	36.311	59.588	1722.3	216.9						ISC	bulletin
GLP	40.289	30.309	1726.6	218.6						ISC	bulletin
ISK	41.066	29.059	1752.1	220.0						ISC	bulletin
IST	41.046	28.996	1757.6	222.5						ISC	bulletin
BUC	44.414	26.097	1759.3	224.0						ISC	bulletin
DMK	41.822	27.757	1789.3	225.1						ISC	bulletin
CMP	45.268	25.038	1795.9	226.0						ISC	bulletin
PVL	43.217	25.333	1875.5	239.0						ISC	bulletin
DRB	39.581	28.638	1885.3	237.3						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/20/72	03:00:00.01	49.400	48.142

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DEV	45.883	22.903	1924.8	240.0						ISC	bulletin
NUR	60.509	24.651	1928.3	237.2			439.0			ISC	bulletin
KDZ	41.650	25.417	1960.7	244.0						ISC	bulletin
KSA	33.823	35.890	2000.3	252.0						ISC	bulletin
NIE	49.419	20.313	2006.2	247.0				455.0		ISC	bulletin
EZN	39.826	26.325	2018.8	252.9						ISC	bulletin
KRA	50.058	19.940	2020.8	248.2				461.0		ISC	bulletin
SOF	42.685	23.334	2046.3	255.0						ISC	bulletin
KJF	64.199	27.715	2046.5	250.1				470.0		ISC	bulletin
PRK	39.246	26.272	2063.3	258.9						ISC	bulletin
CIN	37.600	28.087	2071.6	258.0						ISC	bulletin
PLG	40.374	23.446	2177.3		269.7					ISC	bulletin
ARG	36.216	28.126	2181.2		251.2					ISC	bulletin
SRO	47.813	18.313	2190.3		272.0					ISC	bulletin
SKO	41.972	21.439	2220.8		273.8					ISC	bulletin
JER	31.772	35.197	2232.9		276.0					ISC	bulletin
UPP	59.858	17.627	2257.7		275.1					ISC	bulletin
KHO	37.480	71.530	2292.2		281.3					GS	bulletin
KZN	40.307	21.771	2297.7		281.4					ISC	bulletin
PTL	38.049	23.865	2308.6		283.6					ISC	bulletin
UME	63.815	20.237	2311.9		280.4					ISC	bulletin
VIE	48.248	16.362	2317.7		283.8					ISC	bulletin
VKA	48.265	16.318	2320.3		283.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/20/72	03:00:00.01	49.400	48.142

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TLG&	43.238	77.225	2323.2		284.1					CSE	record
ATH	37.972	23.717	2323.9		284.0					ISC	bulletin
SOD	67.371	26.629	2335.8		283.7					ISC	bulletin
KBL	34.541	69.043	2374.3		290.5					ISC	bulletin
PRU	49.988	14.542	2402.6		291.5					ISC	bulletin
JAN	39.657	20.851	2403.4		292.4					ISC	bulletin
PRA	50.070	14.433	2408.4		292.0					ISC	bulletin
BRG	50.873	13.943	2426.5		292.0					ISC	bulletin
ZAG	45.829	15.994	2427.8		295.3					ISC	bulletin
BRN	52.419	13.203	2453.7		295.9					ISC	bulletin
EIL	29.550	34.950	2466.8		296.5					ISC	bulletin
SKAL&	49.570	82.600	2472.7		298.2					CSE	record
HFS	60.134	13.696	2477.3		297.0					ISC	bulletin
CLL	51.308	13.002	2483.7		298.3					ISC	bulletin
VAM	35.407	24.200	2488.1		298.0					ISC	bulletin
COP	55.683	12.433	2488.7		299.0					ISC	bulletin
KHC	49.131	13.578	2491.4		300.0					ISC	bulletin
VLS	38.177	20.590	2520.4		303.8					ISC	bulletin
LJU	46.043	14.533	2525.0		303.7					ISC	bulletin
KEV	69.755	27.007	2530.9		301.0					ISC	bulletin
WRS	34.150	71.400	2548.0		305.5					ISC	bulletin
BKOL&	42.633	79.983	2553.4		305.7					CSE	record
KIR	67.840	20.417	2563.0		304.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/20/72	03:00:00.01	49.400	48.142

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
HLW	29.858	31.342	2588.4		296.0					ISC	bulletin
MOX	50.665	11.616	2592.0		309.3					ISC	bulletin
TRI	45.709	13.764	2594.0		310.3					ISC	bulletin
GRF	49.692	11.222	2642.6		314.8					ISC	bulletin
NAO	60.824	10.832	2647.6		314.2					ISC	bulletin
FUR	48.163	11.275	2683.4		317.0					ISC	bulletin
KON	59.649	9.598	2692.8		317.2					ISC	bulletin
NIL	33.650	73.252	2703.3		319.2					ISC	bulletin
TRO	69.632	18.928	2737.1		320.2					ISC	bulletin
MNL	33.147	73.750	2775.6		325.6					ISC	bulletin
STU	48.772	9.195	2811.4		328.1					ISC	bulletin
RMP	41.811	12.702	2857.5		332.0					ISC	bulletin
KRL	49.011	8.412	2859.1		394.8					ISC	bulletin
BUH	48.676	8.228	2882.6		334.6					ISC	bulletin
WIT	52.813	6.670	2886.0		334.5					ISC	bulletin
BNS	50.964	7.176	2891.0		335.3					ISC	bulletin
STR	48.585	7.766	2918.1		338.5					ISC	bulletin
BER	60.383	5.334	2938.2		337.8					ISC	bulletin
LAH	31.550	74.333	2944.9		338.5					ISC	bulletin
WLS	48.413	7.354	2952.9		339.8					ISC	bulletin
CDF	48.412	7.276	2958.3		340.5					ISC	bulletin
BAS	47.540	7.582	2967.3		343.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/04/72	07:00:00	67.75 (?)	33.10 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SOD	67.371	26.629	278.8	49.0			83.0			ISC	bulletin
KEV	69.755	27.007	332.6	55.0			97.0			ISC	bulletin
KJF	64.199	27.715	465.1	72.0			136.0			ISC	bulletin
KIR	67.840	20.417	534.3	78.9						ISC	bulletin
GIR&	62.470	33.687	589.3	81.9		98.8	141.7		167.3	CSE	record
TRO	69.632	18.928	610.5	89.4			141.0			ISC	bulletin
UME	63.815	20.237	732.1	103.5						ISC	bulletin
PUL	59.773	30.324	899.3	128.0			214.0		254.0	GS	record
NUR	60.509	24.651	904.1	125.0			215.0			ISC	bulletin
UPP	59.858	17.627	1157.4	155.4						ISC	bulletin
HFS	60.134	13.696	1265.2	168.0						ISC	bulletin
NAO	60.824	10.832	1314.3	172.0						ISC	bulletin
KBS	78.918	11.924	1399.7	182.0			327.0			ISC	bulletin
OBN	55.115	36.568	1419.1	182.8			318.0		401.0	GS	record
KON	59.649	9.598	1456.3	190.1			330.0			ISC	bulletin
VERT&	58.855	60.820	1683.7	212.6	214.2		366.1		463.4	CSE	record
COP	55.683	12.433	1715.0	216.0			385.0			ISC	bulletin
ARU	56.416	58.570	1809.8	228.0	235.0			418.5	517.0	GS	record
SVE	56.827	60.637	1849.2	233.0	246.0		420.0	432.0	540.0	GS	record
CLL	51.308	13.002	2132.9	269.0			476.0			ISC	bulletin
BRG	50.873	13.943	2152.0	271.9						ISC	bulletin
NIE	49.419	20.313	2161.8	270.0						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/04/72	07:00:00	67.75 (?)	33.10 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MZG	48.514	23.514	2208.5	277.0			498.5		628.0	GS	bulletin
EDU	56.548	-3.014	2209.2	278.6						ISC	bulletin
PRU	49.988	14.542	2228.0	281.0						ISC	bulletin
MOX	50.665	11.616	2237.4	281.5						ISC	bulletin
EDI	55.923	-3.186	2268.8		284.0					ISC	bulletin
EKA	55.333	-3.159	2318.2		290.0					ISC	bulletin
KHC	49.131	13.578	2341.8		290.0					ISC	bulletin
GRF	49.692	11.222	2347.8		293.0					ISC	bulletin
VRI	45.870	26.725	2462.9		303.0					ISC	bulletin
FUR	48.163	11.275	2503.4		308.0					ISC	bulletin
KKOR&	52.912	69.025	2519.4		304.2					CSE	record
ALAB&	53.600	70.900	2531.5		305.0					CSE	record
BUH	48.676	8.228	2539.0		311.0					ISC	bulletin
BRV	53.083	70.250	2552.0		308.0					GS	bulletin
DZHU&	52.933	70.600	2579.3		310.3					CSE	record
MAKI&	52.570	70.617	2612.7		313.4					CSE	record
ALE	82.503	-62.350	2689.9		322.7					ISC	bulletin
FLN	48.763	-0.482	2821.2		335.6					ISC	bulletin
SSC	48.584	-0.108	2825.1		336.0					ISC	bulletin
GRR	48.388	-0.858	2871.1		340.0					ISC	bulletin
TCF	46.288	2.210	2971.3		346.8					ISC	bulletin
LSF	46.250	1.529	2998.0		348.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/21/72	09:00:00.31	52.118	52.068

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	638.1	84.0		104.2	151.0		175.1	GS	record
SVE	56.827	60.637	762.3	100.2		119.2	176.7		216.7	GS	record
OBN	55.115	36.568	1075.2	136.9		172.7	242.2		303.7	GS	record
KKOR&	52.912	69.025	1151.0	147.8			260.0		328.1	CSE	record
BRV	53.083	70.250	1232.3	158.3			281.7		347.7	GS	bulletin
DZHU&	52.933	70.600	1256.6	159.8			278.2		351.3	CSE	record
MAKI&	52.570	70.617	1260.7	161.1			286.2		361.5	CSE	record
ALAB&	53.600	70.900	1274.4	161.9			286.7		362.5	CSE	record
SHE	40.646	48.642	1300.3	167.2						GS	bulletin
BKR&	41.730	43.510	1322.5	169.2			308.4			CSE	record
ABS	41.750	42.810	1347.2	169.7						GS	bulletin
DYR&	38.992	45.983	1531.1	193.9						CSE	record
SIM	44.949	34.116	1539.3	195.7						GS	bulletin
ALU	44.682	34.403	1539.8	193.7			350.7			GS	bulletin
YAL	44.487	34.155	1568.7	196.5						GS	bulletin
CRA	48.283	25.933	1901.3	241.9			424.9			GS	bulletin
NUR	60.509	24.651	1915.8	234.7			420.7			ISC	bulletin
KJF	64.199	27.715	1942.6	238.2			427.7			ISC	bulletin
VRI	45.870	26.725	1966.3	248.7						ISC	bulletin
FRG	40.370	71.780	1990.2	249.0						GS	bulletin
RAK	48.055	24.198	2029.9	248.7						GS	bulletin
MZG	48.514	23.514	2057.1	254.6						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/21/72	09:00:00.31	52.118	52.068

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CMP	45.268	25.038	2113.5	259.7						ISC	bulletin
TLG&	43.238	77.225	2114.1	261.3						CSE	record
ISK	41.066	29.059	2131.8	263.4						ISC	bulletin
SKAL&	49.570	82.600	2151.0	265.3						CSE	record
DMK	41.822	27.757	2157.4	267.2						ISC	bulletin
SOD	67.371	26.629	2187.9	266.4						ISC	bulletin
KHO	37.480	71.530	2223.2	274.7						GS	bulletin
NIE	49.419	20.313	2240.1	271.7						ISC	bulletin
KRA	50.058	19.940	2242.3	273.7						ISC	bulletin
UME	63.815	20.237	2251.8	273.8						ISC	bulletin
DRB	39.581	28.638	2272.2	277.7						ISC	bulletin
UPP	59.858	17.627	2282.4	276.3			502.7			ISC	bulletin
BKOL&	42.633	79.983	2334.8		284.7					CSE	record
KEV	69.755	27.007	2350.8		284.7					ISC	bulletin
KBL	34.541	69.043	2373.4		288.9					ISC	bulletin
KIR	67.840	20.417	2435.9		291.6					ISC	bulletin
CIN	37.600	28.087	2465.5		297.7					ISC	bulletin
SHI	29.644	52.526	2492.5		298.7					ISC	bulletin
HFS	60.134	13.696	2503.5		297.7					ISC	bulletin
WRS	34.150	71.400	2521.3		300.8					ISC	bulletin
SKO	41.972	21.439	2558.0		304.8					ISC	bulletin
VKA	48.265	16.318	2559.6		306.7					ISC	bulletin
SOP	47.683	16.558	2569.2		305.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/21/72	09:00:00.31	52.118	52.068

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TRO	69.632	18.928	2590.2		306.5					ISC	bulletin
COP	55.683	12.433	2597.0		308.7					ISC	bulletin
PRU	49.988	14.542	2610.3		309.7					ISC	bulletin
PRA	50.070	14.433	2614.6		316.7					ISC	bulletin
BRG	50.873	13.943	2618.8		310.4					ISC	bulletin
ABAL&	58.116	92.717	2632.8		311.7					CSE	record
NIL	33.650	73.252	2660.1		315.2					ISC	bulletin
KHC	49.131	13.578	2709.2		318.7					ISC	bulletin
KON	59.649	9.598	2731.5		318.3					ISC	bulletin
MOX	50.665	11.616	2781.6		323.7					ISC	bulletin
LJU	46.043	14.533	2787.7		325.7					ISC	bulletin
GRF	49.692	11.222	2845.3		330.7					ISC	bulletin
TRI	45.709	13.764	2857.8		330.5					ISC	bulletin
FUR	48.163	11.275	2907.2		335.7					ISC	bulletin
BER	60.383	5.334	2966.2		338.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/72	09:00:00.18	46.853	44.938

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZUG	42.400	41.800	553.2	76.8						GS	bulletin
TI2	41.730	44.750	568.7	78.8						GS	bulletin
BKR&	41.730	43.510	579.8	79.7						CSE	record
ABS	41.750	42.810	591.1	81.8						GS	bulletin
STE	41.000	44.370	651.1	87.4						GS	bulletin
SHE	40.646	48.642	750.2	100.8						GS	bulletin
SHE	40.633	48.633	751.2	100.8						ISC	bulletin
GRS	39.500	46.333	823.6	108.8						ISC	bulletin
ERZ	39.915	41.277	824.6	111.8						ISC	bulletin
ALU	44.682	34.403	852.5	111.8						GS	bulletin
DYR&	38.992	45.983	876.3	116.9		144.1	205.9		246.6	CSE	record
YAL	44.487	34.155	878.6	114.9			201.2			GS	bulletin
LNK	38.758	48.852	953.0	119.8						GS	bulletin
KAS	41.372	33.767	1079.0	143.7						ISC	bulletin
OBN	55.115	36.568	1088.4	140.4		178.0	239.8		302.8	GS	record
ANK	39.917	32.817	1244.4	163.4						ISC	bulletin
IAS	47.193	27.562	1317.4	165.8						ISC	bulletin
TEH	35.738	51.386	1344.3	171.8						ISC	bulletin
BAC	46.567	26.900	1375.2	172.8						ISC	bulletin
KER	34.352	47.106	1398.0	182.8						ISC	bulletin
VRI	45.870	26.725	1401.2	177.8						ISC	bulletin
ARU	56.416	58.570	1416.0	176.8			321.3			GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/72	09:00:00.18	46.853	44.938

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ISK	41.066	29.059	1422.1	179.6						ISC	bulletin
DMK	41.822	27.757	1474.1	186.8						ISC	bulletin
BUC	44.414	26.097	1488.4	192.8				341.8		ISC	bulletin
KOV	48.315	25.067	1497.8	189.8						GS	bulletin
SVE	56.827	60.637	1541.6	192.8			341.8	357.8	430.8	GS	record
CMP	45.268	25.038	1543.9	199.8						ISC	bulletin
DRB	39.581	28.638	1544.9	196.8						ISC	bulletin
RAK	48.055	24.198	1563.3	196.8				362.8		GS	bulletin
PVL	43.217	25.333	1590.3	201.8						ISC	bulletin
KDZ	41.650	25.417	1655.4	206.8						ISC	bulletin
MSH	36.311	59.588	1684.5	214.5						ISC	bulletin
EZN	39.826	26.325	1691.2	153.6						ISC	bulletin
DEV	45.883	22.903	1691.5	212.8						ISC	bulletin
CIN	37.600	28.087	1721.3	219.8						ISC	bulletin
PRK	39.246	26.272	1731.3	220.5						ISC	bulletin
SOF	42.685	23.334	1763.4	223.8						ISC	bulletin
ARG	36.216	28.126	1824.7	232.8						ISC	bulletin
NIE	49.419	20.313	1844.6	229.2						ISC	bulletin
KKOR&	52.912	69.025	1845.1	228.2				422.0	516.6	CSE	record
JER	31.772	35.197	1866.9	236.3						ISC	bulletin
PLG	40.374	23.446	1868.4	236.0						ISC	bulletin
VEDN&	52.600	69.500	1870.0	231.1	242.6		412.1	429.2	528.7	CSE	record
KRA	50.058	19.940	1872.0	231.7						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/72	09:00:00.18	46.853	44.938

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BEO	44.821	20.455	1905.4	244.5						ISC	bulletin
BRV	53.083	70.250	1929.5	237.0						GS	bulletin
SKO	41.972	21.439	1938.0	244.8						ISC	bulletin
MAKI&	52.570	70.617	1944.1	240.0	250.0		420.4		543.4	CSE	record
SAM	39.660	66.950	1946.7	242.8						GS	bulletin
DZHU&	52.933	70.600	1949.5	240.2	251.0		420.9		545.5	CSE	record
PTL	38.049	23.865	1978.6	249.5						ISC	bulletin
ALAB&	53.600	70.900	1983.1	243.5	253.4			442.9	556.0	CSE	record
ATH	37.972	23.717	1994.1	249.8						ISC	bulletin
KZN	40.307	21.771	1995.9	250.3						ISC	bulletin
SRO	47.813	18.313	2003.2	252.0						ISC	bulletin
NUR	60.509	24.651	2008.3	244.3						ISC	bulletin
CHM	42.319	69.603	2010.9	250.8						GS	bulletin
SHI	29.644	52.526	2016.7	251.8						ISC	bulletin
TIR	41.348	19.865	2085.9	261.8						ISC	bulletin
BRA	48.168	17.105	2088.1	257.4						ISC	bulletin
JAN	39.657	20.851	2099.7	262.9						ISC	bulletin
EIL	29.550	34.950	2103.0	259.8						ISC	bulletin
VAM	35.407	24.200	2141.9	265.8						ISC	bulletin
VIE	48.248	16.362	2141.9	266.8						ISC	bulletin
VKA	48.265	16.318	2144.9	266.8						ISC	bulletin
KJF	64.199	27.715	2198.6	267.8						ISC	bulletin
VLS	38.177	20.590	2205.7	271.8						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/72	09:00:00.18	46.853	44.938

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZAG	45.829	15.994	2216.2	274.1						ISC	bulletin
HLW	29.858	31.342	2218.8	271.8						ISC	bulletin
PRU	49.988	14.542	2258.5	277.8						ISC	bulletin
PRA	50.070	14.433	2265.8	277.8						ISC	bulletin
FRG	40.370	71.780	2267.5	280.4						GS	bulletin
UPP	59.858	17.627	2294.2	278.2			502.8			ISC	bulletin
BRG	50.873	13.943	2297.7		280.8					ISC	bulletin
LJU	46.043	14.533	2320.8		283.9					ISC	bulletin
KHC	49.131	13.578	2335.0		285.2					ISC	bulletin
CLL	51.308	13.002	2363.0		286.6					ISC	bulletin
TRI	45.709	13.764	2387.6		290.0					ISC	bulletin
KHO	37.480	71.530	2412.5		294.4					GS	bulletin
UME	63.815	20.237	2420.7		291.3					ISC	bulletin
KBL	34.541	69.043	2434.2		296.3					ISC	bulletin
HOF	50.314	11.877	2446.3		295.8					ISC	bulletin
MOX	50.665	11.616	2462.5		296.8					ISC	bulletin
GRF	49.692	11.222	2498.8		301.4					ISC	bulletin
HFS	60.134	13.696	2506.5		299.8					ISC	bulletin
SOD	67.371	26.629	2515.7		300.2					ISC	bulletin
FUR	48.163	11.275	2517.2		302.8					ISC	bulletin
MUR	38.370	73.930	2537.3		306.8					GS	bulletin
TLG&	43.238	77.225	2553.8		326.0					CSE	record
KDSK	42.123	77.188	2596.3		310.6					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/72	09:00:00.18	46.853	44.938

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RMP	41.811	12.702	2608.7		310.8					ISC	bulletin
WRS	34.150	71.400	2626.3		313.2					ISC	bulletin
QUE	30.188	66.950	2644.2		315.8					ISC	bulletin
STU	48.772	9.195	2658.2		315.8					ISC	bulletin
NBO	61.031	10.778	2691.7		316.2					ISC	bulletin
KON	59.649	9.598	2705.9		318.0					ISC	bulletin
KRL	49.011	8.412	2710.7		320.8					ISC	bulletin
KIR	67.840	20.417	2721.7		319.7					ISC	bulletin
BUH	48.676	8.228	2730.1		320.8					ISC	bulletin
KEV	69.755	27.007	2732.5		320.7					ISC	bulletin
STR	48.585	7.766	2765.3		324.2					ISC	bulletin
BNS	50.964	7.176	2771.8		324.0					ISC	bulletin
SKAL&	49.570	82.600	2783.1		322.2					CSE	record
BKOL&	42.633	79.983	2787.7		303.9					CSE	record
NIL	33.650	73.252	2792.6		326.9					ISC	bulletin
WIT	52.813	6.670	2793.7		327.1					ISC	bulletin
WLS	48.413	7.354	2798.7		326.2					ISC	bulletin
CDF	48.412	7.276	2804.4		325.8					ISC	bulletin
BSF	47.832	6.792	2852.4		330.6					ISC	bulletin
HAU	48.006	6.348	2880.8		332.6					ISC	bulletin
TRO	69.632	18.928	2908.8		334.4					ISC	bulletin
LNS	45.289	6.915	2914.8		335.1					ISC	bulletin
RSL	45.688	6.626	2923.6		335.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/72	09:00:00.18	46.853	44.938

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BES	47.250	5.988	2925.9		336.4					ISC	bulletin
BER	60.383	5.334	2956.4		339.5					ISC	bulletin
DOU	50.096	4.594	2965.1		342.4					ISC	bulletin
UCC	50.798	4.359	2970.6		355.8					ISC	bulletin
VOU	46.399	5.651	2974.4		340.3					ISC	bulletin
SPF	43.564	6.697	2992.9		342.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/24/72	09:00:00.04	51.990	51.867

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	657.8	87.2		107.7	157.5		189.0	GS	record
OBN	55.115	36.568	1068.6	137.5		173.4	235.0		304.0	GS	record
KKOR&	52.912	69.025	1167.3	151.0			264.3		329.6	CSE	record
VEDN&	52.600	69.500	1201.0	154.7			276.5		334.4	CSE	record
DZHU&	52.933	70.600	1273.0	163.0			287.7		348.0	CSE	record
MAKI&	52.570	70.617	1276.7	163.5			288.1		348.3	CSE	record
ALAB&	53.600	70.900	1291.4	164.8			292.1		355.7	CSE	record
ZUG	42.400	41.800	1306.9	168.0						GS	bulletin
ABS	41.750	42.810	1327.7	169.0						GS	bulletin
AAA	43.267	76.950	1347.1	175.4						GS	bulletin
STE	41.000	44.370	1347.2	172.2						GS	bulletin
DYR&	38.992	45.983	1513.0	192.9						CSE	record
ALU	44.682	34.403	1521.2	192.0						GS	bulletin
KAS	41.372	33.767	1808.7		237.8					ISC	bulletin
NUR	60.509	24.651	1914.4	237.0			427.0			ISC	bulletin
KOV	48.315	25.067	1945.0	241.0						GS	bulletin
KJF	64.199	27.715	1945.8	240.0			426.0			ISC	bulletin
RAK	48.055	24.198	2015.7	251.0						GS	bulletin
TLG&	43.238	77.225	2123.0	265.6						CSE	record
SOD	67.371	26.629	2193.5	267.8						ISC	bulletin
NIE	49.419	20.313	2227.6	274.0						ISC	bulletin
KRA	50.058	19.940	2230.4	275.1						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/24/72	09:00:00.04	51.990	51.867

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UME	63.815	20.237	2253.1		278.0		495.0			ISC	bulletin
UPP	59.858	17.627	2279.5		279.7					ISC	bulletin
PSZ	47.919	19.894	2316.9		274.0					ISC	bulletin
BKOL&	42.633	79.983	2344.3		287.2					CSE	record
KEV	69.755	27.007	2358.2		285.8					ISC	bulletin
KIR	67.840	20.417	2440.6		293.4					ISC	bulletin
SHI	29.644	52.526	2478.5		298.0					ISC	bulletin
HFS	60.134	13.696	2500.7		295.0					ISC	bulletin
TRO	69.632	18.928	2596.0		308.5					ISC	bulletin
PRU	49.988	14.542	2599.2		309.0					ISC	bulletin
PRA	50.070	14.433	2603.5		315.0					ISC	bulletin
BRG	50.873	13.943	2608.3		311.0					ISC	bulletin
ABAL&	58.116	92.717	2651.9		314.3					CSE	record
CLL	51.308	13.002	2656.8		313.0					ISC	bulletin
NIL	33.650	73.252	2660.9		315.4					ISC	bulletin
NAO	60.824	10.832	2662.7		312.4					ISC	bulletin
KHC	49.131	13.578	2697.6		318.3					ISC	bulletin
QUE	30.188	66.950	2716.5		317.0					ISC	bulletin
KON	59.649	9.598	2728.3		319.2					ISC	bulletin
MOX	50.665	11.616	2771.4		324.5					ISC	bulletin
GRF	49.692	11.222	2834.5		330.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/24/72	10:00:00.23	51.842	64.210

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KKOR&	52.912	69.025	348.5	51.2						CSE	record
VEDN&	52.600	69.500	370.8	54.1		61.3	95.2		105.4	CSE	record
MAKI&	52.570	70.617	444.9	62.8		72.9	110.1		126.6	CSE	record
DZHU&	52.933	70.600	451.2	63.6		73.5	112.1		128.1	CSE	record
ALAB&	53.600	70.900	491.9	67.1		77.1	119.2		135.2	CSE	record
SVE	56.827	60.637	601.0	81.4		96.8	144.8		173.8	GS	record
ARU	56.416	58.570	627.7	86.8		100.9	147.8		170.8	GS	record
CHM	42.319	69.603	1133.1	145.7			256.7		323.7	GS	bulletin
NVS	54.850	83.266	1307.1	167.8		209.9	291.2		368.6	GS	record
SKAL&	49.570	82.600	1318.6	168.3			300.4		368.2	CSE	record
NAM	41.000	71.660	1331.2	171.8						GS	bulletin
TLG&	43.238	77.225	1364.1	173.5			307.5		373.4	CSE	record
SAM	39.660	66.950	1368.8	172.8						GS	bulletin
FRG	40.370	71.780	1399.6	179.2						GS	bulletin
KDSK	42.123	77.188	1457.8	185.3						GS	bulletin
ELT	53.253	86.277	1498.0	189.3		243.3	336.3		422.3	GS	record
BKOL&	42.633	79.983	1565.5	199.0			354.6	376.2	441.2	CSE	record
MSH	36.311	59.588	1761.8	225.8						ISC	bulletin
OBN	55.115	36.568	1856.9	230.3			406.8		528.8	GS	record
BKR&	41.730	43.510	1926.4	240.8						CSE	record
STE	41.000	44.370	1930.9	238.8						GS	bulletin
ABAL&	58.116	92.717	1935.2	242.3	248.4					CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/24/72	10:00:00.23	51.842	64.210

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KBL	34.541	69.043	1958.2	245.5						ISC	bulletin
ABS	41.750	42.810	1967.9	243.8						GS	bulletin
ZUG	42.400	41.800	1984.0		252.8					GS	bulletin
DYR&	38.992	45.983	2005.5	249.4						CSE	record
WRS	34.150	71.400	2045.9		256.3					ISC	bulletin
UER	51.563	94.087	2049.6	254.3						GS	record
TAB	38.068	46.327	2068.3		257.8					ISC	bulletin
NIL	33.650	73.252	2145.4		266.6					ISC	bulletin
FEO	45.019	35.390	2243.8		274.8					GS	bulletin
ALU	44.682	34.403	2330.0		282.8					GS	bulletin
SIM	44.949	34.116	2334.6		284.8					GS	bulletin
YAL	44.487	34.155	2358.0		285.5					GS	bulletin
QUE	30.188	66.950	2411.9		293.4					ISC	bulletin
KJF	64.199	27.715	2504.5		299.1					ISC	bulletin
KAS	41.372	33.767	2578.0		308.4					ISC	bulletin
NUR	60.509	24.651	2590.0		307.3					ISC	bulletin
SOD	67.371	26.629	2665.6		315.2					ISC	bulletin
IAS	47.193	27.562	2671.6		323.8					ISC	bulletin
BAC	46.567	26.900	2746.9		331.8					ISC	bulletin
KEV	69.755	27.007	2760.9		323.1					ISC	bulletin
NDI	28.683	77.217	2785.5		326.8					ISC	bulletin
KOV	48.315	25.067	2792.3		325.8					GS	bulletin
VRI	45.870	26.725	2793.8		325.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/24/72	10:00:00.23	51.842	64.210

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UME	63.815	20.237	2854.5		330.7					ISC	bulletin
RAK	48.055	24.198	2863.0		332.8					GS	bulletin
ISK	41.066	29.059	2914.7		336.2					ISC	bulletin
KIR	67.840	20.417	2932.7		336.8					ISC	bulletin
CMP	45.268	25.038	2941.3		340.8					ISC	bulletin
DMK	41.822	27.757	2954.7		342.8					ISC	bulletin
UPP	59.858	17.627	2979.2		340.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/15/73	02:00:00.02	42.775	67.408

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CHM	42.319	69.603	187.0	31.1			55.5			GS	bulletin
TAS	41.340	69.310	223.7	36.3		38.2	63.6			GS	bulletin
FRG	40.370	71.780	451.3	63.8						GS	bulletin
DSH	38.570	68.760	480.0	66.0						GS	bulletin
KHO	37.480	71.530	683.7	94.0						GS	bulletin
AAB	43.230	77.230	800.9	107.2						GS	bulletin
PRZ	42.480	78.400	900.5	121.0						GS	bulletin
KBL	34.541	69.043	923.6	123.2						ISC	bulletin
MSH	36.311	59.588	980.9	127.4						ISC	bulletin
WRS	34.150	71.400	1016.9	134.4						ISC	bulletin
BKOL&	42.633	79.983	1028.1	136.5		170.3	238.7		292.6	CSE	record
MAKI&	52.570	70.617	1113.9	142.8			255.1		317.0	CSE	record
KKOR&	52.912	69.025	1132.3	145.0			257.4		319.8	CSE	record
VOST&	52.720	70.970	1136.0	145.3			257.5		319.8	CSE	record
KOSH&	53.030	69.070	1145.7	147.1			257.8		321.0	CSE	record
CHKA&	53.720	70.650	1239.0	157.1			274.2		348.4	CSE	record
QUE	30.188	66.950	1395.0	180.0						ISC	bulletin
SHE	40.646	48.642	1574.1	200.0						GS	bulletin
TEH	35.738	51.386	1582.1	197.0						ISC	bulletin
USK	50.937	84.773	1597.2	200.8						GS	bulletin
SVE	56.827	60.637	1633.7	199.8			366.5	377.5	466.0	GS	record
ARU	56.416	58.570	1641.5	206.5			369.0	388.5	463.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/15/73	02:00:00.02	42.775	67.408

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GRO	43.320	45.750	1758.5	224.0						GS	bulletin
NVS	54.850	83.266	1767.5	220.0						GS	bulletin
NDI	28.683	77.217	1791.7	223.2			394.0			ISC	bulletin
DYR&	38.992	45.983	1845.9	231.6			412.0		522.4	CSE	record
TAB	38.068	46.327	1855.6	234.0						ISC	bulletin
STE	41.000	44.370	1913.6	238.6						GS	bulletin
LEN	40.780	43.800	1966.0	248.0						GS	bulletin
BKR&	41.730	43.510	1966.3	246.7	256.8			456.7		CSE	record
PYA	44.033	43.058	1967.7	244.5						GS	bulletin
SHI	29.644	52.526	1968.9		250.0					ISC	bulletin
ABS	41.750	42.810	2022.9		253.0					GS	bulletin
UER	51.563	94.087	2227.0		273.3					GS	bulletin
ANN	44.800	37.433	2406.5		292.0					GS	bulletin
ABAL&	58.116	92.717	2449.0		295.3					CSE	record
ORL	52.520	99.830	2634.6		314.8					GS	record
ALU	44.682	34.403	2646.2		311.6					GS	bulletin
YAL	44.487	34.155	2668.5		314.0					GS	bulletin
MOY	51.670	101.000	2697.6		319.6					GS	bulletin
MOY	51.670	101.000	2697.6		320.3			584.5	778.0	GS	record
ARS	51.920	102.430	2799.0		329.0				808.0	GS	record
ZAK	50.383	103.283	2842.5		331.8				812.5	GS	record
KSA	33.823	35.890	2905.7		337.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/28/73	03:00:00.04	50.527	68.323

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KKOR&	52.912	69.025	269.5	41.3			72.1		74.5	CSE	record
MAKI&	52.570	70.617	277.2	42.5						CSE	record
KOSH&	53.030	69.070	283.0	42.0						CSE	record
VOST&	52.720	70.970	304.9	45.2			81.3		85.7	CSE	record
CHKA&	53.720	70.650	389.0	55.2			98.9		111.2	CSE	record
SVE	56.827	60.637	864.1	114.6		139.6	197.5		239.0	GS	record
ARU	56.416	58.570	919.1	120.0		150.0	212.0		261.0	GS	record
FRU	42.830	74.620	980.0	128.0					278.0	GS	bulletin
TAS	41.340	69.310	1022.8	134.0			238.0		293.0	GS	bulletin
AAA	43.267	76.950	1038.4	136.8			236.8		296.8	GS	bulletin
TLG&	43.238	77.225	1054.2	137.5		172.1	240.8		296.4	CSE	record
AAB	43.230	77.230	1055.2	136.6			240.0		301.5	GS	bulletin
NVS	54.850	83.266	1115.3	143.9			253.6		317.8	GS	record
NVS	54.850	83.266	1115.3	144.2						GS	bulletin
KDSK	42.123	77.188	1154.0	151.0						GS	bulletin
USK	50.937	84.773	1158.9	148.6						GS	bulletin
FRG	40.370	71.780	1159.1	151.0						GS	bulletin
PRZ	42.480	78.400	1179.1	154.0						GS	bulletin
BKOL&	42.633	79.983	1248.4	161.0			283.3		348.2	CSE	record
ELT	53.253	86.277	1268.0	161.6			286.5			GS	bulletin
DSH	38.570	68.760	1327.5	173.0			305.0			GS	bulletin
KHO	37.480	71.530	1470.1	192.3						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/28/73	03:00:00.04	50.527	68.323

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KBL	34.541	69.043	1774.4	224.0						ISC	bulletin
ABAL&	58.116	92.717	1782.9	228.0			405.6	415.8	508.7	CSE	record
WRS	34.150	71.400	1833.8	233.0						ISC	bulletin
SHE	40.646	48.642	1876.4	237.0						GS	bulletin
PYA	44.033	43.058	2029.0	251.0						GS	bulletin
BEY	44.017	42.817	2046.7	253.5						GS	bulletin
TEH	35.738	51.386	2131.2		269.0					ISC	bulletin
BKR&	41.730	43.510	2136.0	266.6	278.5					CSE	record
DYR&	38.992	45.983	2167.7		269.2					CSE	record
ABS	41.750	42.810	2182.1		270.0					GS	bulletin
QUE	30.188	66.950	2258.0		278.7					ISC	bulletin
NRI	69.430	88.083	2351.0		285.5					GS	record
NDI	28.683	77.217	2534.5		305.0					ISC	bulletin
SHI	29.644	52.526	2665.1		317.0					ISC	bulletin
APA	67.558	33.442	2690.4		317.8					GS	bulletin
KJF	64.199	27.715	2806.0		326.5					ISC	bulletin
KAS	41.372	33.767	2831.8		330.7					ISC	bulletin
NUR	60.509	24.651	2906.1		335.4					ISC	bulletin
SOD	67.371	26.629	2950.9		339.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/19/73	03:00:00.18	45.758	67.825

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CHM	42.319	69.603	407.3	57.1		66.1			115.5	GS	bulletin
TAS	41.340	69.310	504.6	70.3		78.8			143.8	GS	bulletin
MAKI&	52.570	70.617	783.6	103.0		131.5	181.3		221.3	CSE	record
TLG&	43.238	77.225	796.8	108.3		132.2	190.5		226.2	CSE	record
AAB	43.230	77.230	797.5	105.0		137.5			227.5	GS	bulletin
KKOR&	52.912	69.025	799.6	104.9		131.9	181.9		222.1	CSE	record
DSH	38.570	68.760	801.0	107.8						GS	bulletin
VOST&	52.720	70.970	806.5	105.7		132.5	182.7		223.2	CSE	record
KOSH&	53.030	69.070	813.0	106.7		135.2	186.5		225.7	CSE	record
KDSK	42.123	77.188	851.5	113.3						GS	bulletin
CHKA&	53.720	70.650	907.6	118.0		147.3			255.9	CSE	record
PRZ	42.480	78.400	919.4	123.3					270.3	GS	bulletin
KHO	37.480	71.530	968.2	127.7						GS	bulletin
BKOL&	42.633	79.983	1029.6	134.9		169.6	241.0		295.6	CSE	record
SKAL&	49.570	82.600	1184.2	152.4			268.5		339.6	CSE	record
KBL	34.541	69.043	1247.9	160.7						ISC	bulletin
MSH	36.311	59.588	1253.8	161.1						ISC	bulletin
WRS	34.150	71.400	1322.2	170.3						ISC	bulletin
SVE	56.827	60.637	1326.8	168.2			297.3	323.8		GS	record
ARU	56.416	58.570	1347.6	171.0	177.0		302.8		380.3	GS	record
USK	50.937	84.773	1376.4	173.0					392.5	GS	bulletin
NIL	33.650	73.252	1419.6	181.8						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/19/73	03:00:00.18	45.758	67.825

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MNL	33.147	73.750	1486.7	190.6						ISC	bulletin
NVS	54.850	83.266	1487.0	186.1			331.5			GS	bulletin
NVS	54.850	83.266	1487.0	186.3			331.7		424.1	GS	record
ELT	53.253	86.277	1566.7	197.4					447.7	GS	bulletin
ELT	53.253	86.277	1566.7	197.4			347.6		436.8	GS	record
SHE	40.646	48.642	1652.2	213.3						GS	bulletin
QUE	30.188	66.950	1727.1	218.6						ISC	bulletin
GRO	43.320	45.750	1767.3	221.8						GS	bulletin
KRV	40.647	46.319	1828.8	227.4						GS	bulletin
DDI	30.323	78.056	1927.5	243.8						ISC	bulletin
DYR&	38.992	45.983	1939.1	241.9	251.9					CSE	record
STE	41.000	44.370	1962.4	244.6						GS	bulletin
BKR&	41.730	43.510	1998.2	250.6	258.5					CSE	record
LEN	40.780	43.800	2016.1	263.8						GS	bulletin
UER	51.563	94.087	2024.6	252.8						GS	record
ABS	41.750	42.810	2051.7	256.2						GS	bulletin
NDI	28.683	77.217	2063.3	255.8				474.8		ISC	bulletin
ABAL&	58.116	92.717	2172.2	267.5						CSE	record
ANN	44.800	37.433	2370.0		287.8					GS	bulletin
ORL	52.520	99.830	2428.0		295.0				698.8	GS	record
MOY	51.670	101.000	2502.0		301.8				711.8	GS	record
ARS	51.920	102.430	2601.4		310.8				753.8	GS	record
ALU	44.682	34.403	2605.7		308.7					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/19/73	03:00:00.18	45.758	67.825

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZAK	50.383	103.283	2662.9		316.6				759.8	GS	record
IRK	52.242	104.270	2728.1		321.3					GS	record
NRI	69.430	88.083	2867.1		332.4					GS	record
TIG	52.770	106.330	2868.3		332.5					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/73	05:00:00.35	51.65	54.55

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	591.6	79.2		97.2	138.7		171.7	GS	record
SVE	56.827	60.637	698.6	92.7		111.7	164.2		195.7	GS	record
KKOR&	52.912	69.025	995.3	127.8		161.1	228.3		280.0	CSE	record
KOSH&	53.030	69.070	998.9	128.9		161.8	229.4		281.5	CSE	record
MAKI&	52.570	70.617	1102.3	142.0		177.3	243.9		301.7	CSE	record
CHKA&	53.720	70.650	1109.5	142.3		177.8	248.0		303.3	CSE	record
VOST&	52.720	70.970	1126.0	145.0			255.0		308.4	CSE	record
GRO	43.320	45.750	1136.1	147.7						GS	bulletin
MOS	55.738	37.625	1202.3	153.7						GS	bulletin
OBN	55.115	36.568	1252.2	159.9		202.7	280.7		356.7	GS	record
SHE	40.646	48.642	1303.0	167.2						GS	bulletin
BKR&	41.730	43.510	1384.2	174.9			308.4			CSE	record
ABS	41.750	42.810	1415.2	178.7						GS	bulletin
STE	41.000	44.370	1415.3	178.9						GS	bulletin
ANN	44.800	37.433	1475.6	185.7						GS	bulletin
DYR&	38.992	45.983	1554.5	197.4						CSE	record
TAS	41.340	69.310	1604.0	201.7						GS	bulletin
ALU	44.682	34.403	1677.7	209.7			379.3			GS	bulletin
YAL	44.487	34.155	1706.2	212.1						GS	bulletin
TEH	35.738	51.386	1783.5	224.7						ISC	bulletin
FRU	42.830	74.620	1797.4	225.7			393.2			GS	bulletin
FRG	40.370	71.780	1820.4	227.7						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/73	05:00:00.35	51.65	54.55

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DSH	38.570	68.760	1825.0	229.7			407.7			GS	bulletin
KIS	46.998	28.818	1927.8	242.7						GS	bulletin
NVS	54.850	83.266	1933.9	240.4						GS	bulletin
NVS	54.850	83.266	1933.9	240.4				445.0		GS	record
TLG&	43.238	77.225	1935.7	241.2						CSE	record
SKAL&	49.570	82.600	1984.9	246.0	249.9			452.8	555.1	CSE	record
KHO	37.480	71.530	2060.5	256.3						GS	bulletin
NUR	60.509	24.651	2080.2	253.8			454.1			ISC	bulletin
KJF	64.199	27.715	2087.6	256.6			462.3			ISC	bulletin
MUR	38.370	73.930	2109.2	263.0						GS	bulletin
APA	67.558	33.442	2111.2	261.5						GS	bulletin
VRI	45.870	26.725	2127.4		264.7					ISC	bulletin
KOV	48.315	25.067	2129.9	261.7						GS	bulletin
ELT	53.253	86.277	2144.9	263.6						GS	bulletin
ELT	53.253	86.277	2144.9	263.9						GS	record
BKOL&	42.633	79.983	2156.3		267.3					CSE	record
GLP	40.289	30.309	2244.3		274.7					ISC	bulletin
ISK	41.066	29.059	2267.4		277.6					ISC	bulletin
SOD	67.371	26.629	2318.4	282.2			508.4			ISC	bulletin
ALT	39.055	30.110	2350.7		285.7					ISC	bulletin
WRS	34.150	71.400	2366.2		287.8					ISC	bulletin
UME	63.815	20.237	2405.7		289.8					ISC	bulletin
NIE	49.419	20.313	2415.5		291.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/73	05:00:00.35	51.65	54.55

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRA	50.058	19.940	2418.8		291.7					ISC	bulletin
JOS	48.496	20.539	2435.2		293.7					ISC	bulletin
SHI	29.644	52.526	2445.9		295.0					ISC	bulletin
BCK	37.461	30.589	2449.0		292.7					ISC	bulletin
UPP	59.858	17.627	2451.2		294.3					ISC	bulletin
KEV	69.755	27.007	2469.3		297.0		538.0			ISC	bulletin
NIL	33.650	73.252	2501.0		299.7					ISC	bulletin
PSZ	47.919	19.894	2503.4		300.7					ISC	bulletin
ABAL&	58.116	92.717	2513.5		299.3					CSE	record
KIR	67.840	20.417	2571.5		305.7					ISC	bulletin
PRK	39.246	26.272	2578.7		306.7					ISC	bulletin
IZM	38.398	27.263	2579.1		305.7					ISC	bulletin
BUD	47.484	19.024	2582.4		307.5					ISC	bulletin
CIN	37.600	28.087	2589.6		307.7					ISC	bulletin
QUE	30.188	66.950	2590.1		309.0					ISC	bulletin
NRI	69.430	88.083	2637.0		312.7			578.7		GS	record
HFS	60.134	13.696	2672.0		314.8					ISC	bulletin
VAY	41.321	22.570	2679.3		320.0					ISC	bulletin
PLG	40.374	23.446	2684.1		316.7					ISC	bulletin
BRA	48.168	17.105	2684.9		318.1					ISC	bulletin
ARG	36.216	28.126	2698.6		331.7					ISC	bulletin
UER	51.563	94.087	2703.2		318.5					GS	record
SKO	41.972	21.439	2714.1		320.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/73	05:00:00.35	51.65	54.55

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TRO	69.632	18.928	2718.9		318.9					ISC	bulletin
VIE	48.248	16.362	2732.5		322.1					ISC	bulletin
VKA	48.265	16.318	2734.8		322.1					ISC	bulletin
SOP	47.683	16.558	2743.5		324.7					ISC	bulletin
COP	55.683	12.433	2773.7		324.5					ISC	bulletin
PRU	49.988	14.542	2787.8		325.5					ISC	bulletin
PRA	50.070	14.433	2792.2		326.7					ISC	bulletin
BRG	50.873	13.943	2796.9		325.7					ISC	bulletin
KZN	40.307	21.771	2800.8		327.7					ISC	bulletin
OHR	41.111	20.799	2812.9		328.0					ISC	bulletin
PTL	38.049	23.865	2823.1		327.7					ISC	bulletin
NAO	60.824	10.832	2831.7		327.5					ISC	bulletin
ATH	37.972	23.717	2838.4		330.7					ISC	bulletin
CLL	51.308	13.002	2845.2		329.6					ISC	bulletin
KHC	49.131	13.578	2886.2		333.8					ISC	bulletin
KON	59.649	9.598	2901.2		334.1					ISC	bulletin
JAN	39.657	20.851	2907.0		335.7					ISC	bulletin
MOX	50.665	11.616	2959.9		339.7					ISC	bulletin
LJU	46.043	14.533	2960.5		339.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/26/73	05:59:59.5	53.65	55.40

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	368.3	52.8		60.8	98.3			GS	record
SVE	56.827	60.637	485.3	67.7		78.5	118.0		138.5	GS	record
VERT&	58.855	60.820	669.0	89.1		107.9	159.3		184.8	CSE	record
KKOR&	52.912	69.025	910.4	118.1		148.2	208.6		253.0	CSE	record
KOSH&	53.030	69.070	911.1	118.3		148.4	208.9		253.2	CSE	record
CHKA&	53.720	70.650	1005.0	129.2		160.2	229.1		282.2	CSE	record
MAKI&	52.570	70.617	1023.4	131.3		165.6	235.9		287.8	CSE	record
VOST&	52.720	70.970	1043.1	134.0			241.7		294.3	CSE	record
OBN	55.115	36.568	1229.8	157.5		201.5	278.5		351.5	GS	record
TSAL&	41.603	44.083	1580.7	199.8						CSE	record
BKR&	41.730	43.510	1591.5	200.6						CSE	record
KRV	40.647	46.319	1596.5	199.5						GS	bulletin
ABS	41.750	42.810	1619.0	203.5						GS	bulletin
ANN	44.800	37.433	1628.3	205.5						GS	bulletin
TAS	41.340	69.310	1715.6	223.0						GS	bulletin
NVS	54.850	83.266	1808.1	225.6			395.5			GS	bulletin
NVS	54.850	83.266	1808.1		231.9		395.5		516.5	GS	record
ALU	44.682	34.403	1815.0	227.0						GS	bulletin
YAL	44.487	34.155	1844.1	229.5						GS	bulletin
FRU	42.830	74.620	1854.5	230.5						GS	bulletin
FRG	40.370	71.780	1920.0	241.0						GS	bulletin
SKAL&	49.570	82.600	1923.8	239.8						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/26/73	05:59:59.5	53.65	55.40

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
APA	67.558	33.442	1938.6	242.0						GS	bulletin
KJF	64.199	27.715	1954.1	243.5			429.5			ISC	bulletin
TLG&	43.238	77.225	1971.7	244.5						CSE	record
AAB	43.230	77.230	1972.6	244.5						GS	bulletin
NUR	60.509	24.651	1991.0	245.5			435.5			ISC	bulletin
USK	50.937	84.773	2010.4	249.5						GS	bulletin
ELT	53.253	86.277	2034.3	251.3						GS	bulletin
KDSK	42.123	77.188	2056.6	256.9						GS	bulletin
PRZ	42.480	78.400	2099.2		262.5					GS	bulletin
KAS	41.372	33.767	2108.6	261.0						ISC	bulletin
SOD	67.371	26.629	2161.0	265.6						ISC	bulletin
KHO	37.480	71.530	2180.7	270.1						GS	bulletin
BKOL&	42.633	79.983	2181.9	269.4						CSE	record
VRI	45.870	26.725	2218.7		271.5					ISC	bulletin
MZG	48.514	23.514	2283.3		279.0					GS	bulletin
UME	63.815	20.237	2287.5		280.5					ISC	bulletin
KEV	69.755	27.007	2296.0		281.5					ISC	bulletin
ABAL&	58.116	92.717	2354.2		285.9					CSE	record
UPP	59.858	17.627	2373.9		287.6					ISC	bulletin
NRI	69.430	88.083	2415.6		293.0					GS	record
KIR	67.840	20.417	2420.1		292.4					ISC	bulletin
KRA	50.058	19.940	2447.5		294.5					ISC	bulletin
NIE	49.419	20.313	2451.6		295.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/26/73	05:59:59.5	53.65	55.40

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ALT	39.055	30.110	2507.3		302.5					ISC	bulletin
PSZ	47.919	19.894	2552.6		366.5					ISC	bulletin
HFS	60.134	13.696	2592.4		308.1					ISC	bulletin
UER	51.563	94.087	2596.8		308.7					GS	record
NIL	33.650	73.252	2628.2		312.5					ISC	bulletin
SHI	29.644	52.526	2672.7		316.5					ISC	bulletin
NAO	60.824	10.832	2745.8		321.6					ISC	bulletin
QUE	30.188	66.950	2764.5		316.1					ISC	bulletin
VIE	48.248	16.362	2769.0		325.9					ISC	bulletin
VKA	48.265	16.318	2771.0		325.9					ISC	bulletin
SOP	47.683	16.558	2785.3		326.5					ISC	bulletin
VAY	41.321	22.570	2790.2		326.4					ISC	bulletin
PRU	49.988	14.542	2804.8		328.0					ISC	bulletin
BRG	50.873	13.943	2804.8		327.5					ISC	bulletin
PRA	50.070	14.433	2808.2		328.5					ISC	bulletin
SKO	41.972	21.439	2816.2		329.3					ISC	bulletin
KON	59.649	9.598	2825.3		328.5					ISC	bulletin
CLL	51.308	13.002	2847.4		330.9					ISC	bulletin
KHC	49.131	13.578	2908.2		336.5					ISC	bulletin
MOX	50.665	11.616	2964.8		341.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/08/74	05:59:59.95	53.70	55.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	374.6	54.0		62.0	94.1		107.0	GS	record
SVE	56.827	60.637	494.5	68.1		79.1	120.1		142.1	GS	record
KOSH&	53.030	69.070	930.8	117.0		146.6	218.9		258.5	CSE	record
MAKI&	52.570	70.617	1043.2	130.7			238.4		294.3	CSE	record
OBN	55.115	36.568	1209.2	159.1		194.7	270.1		346.1	GS	record
DOMB&	43.337	41.690	1513.1	191.8						CSE	record
GIR&	62.470	33.687	1583.4	202.5			353.5		452.4	CSE	record
NVS	54.850	83.266	1825.7	231.3						GS	record
KJF	64.199	27.715	1936.7		245.1			450.4		ISC	bulletin
NUR	60.509	24.651	1971.6		247.1		442.1			ISC	bulletin
ELT	53.253	86.277	2052.6	251.7			454.1			GS	record
SOD	67.371	26.629	2145.3		269.9			491.1		ISC	bulletin
UME	63.815	20.237	2269.3		280.8					ISC	bulletin
MLR	45.492	25.944	2274.3		282.1					ISC	bulletin
KEV	69.755	27.007	2281.8		284.3					ISC	bulletin
UPP	59.858	17.627	2354.1		288.6					ISC	bulletin
KIR	67.840	20.417	2404.0		293.6					ISC	bulletin
NRI	69.430	88.083	2421.1		292.6					GS	record
TRO	69.632	18.928	2542.0		307.4					ISC	bulletin
HFS	60.134	13.696	2572.8		309.2					ISC	bulletin
UER	51.563	94.087	2615.2		309.1					GS	record
NAO	60.824	10.832	2726.3		322.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/08/74	05:59:59.95	53.70	55.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRG	50.873	13.943	2784.3		327.9					ISC	bulletin
PRU	49.988	14.542	2784.4		328.1					ISC	bulletin
KON	59.649	9.598	2805.6		327.1					ISC	bulletin
KHC	49.131	13.578	2887.9		336.5					ISC	bulletin
MOX	50.665	11.616	2944.3		341.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/29/76	05:00:00.5	47.870	48.150

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DBC	43.020	46.830	548.2	76.5		91.0	133.5		154.5	GS	record
DRN	42.030	48.330	648.4	88.0		105.5	149.0		182.5	GS	record
TBZ	40.996	39.776	1011.4	131.0						ISC	bulletin
TAB	38.068	46.327	1097.5	145.0						ISC	bulletin
OBN	55.115	36.568	1135.1	147.5		184.0	248.5		324.5	GS	record
KVT	41.081	36.046	1219.4	157.0						ISC	bulletin
SRI	36.758	49.383	1236.7	157.8						ISC	bulletin
KEB	38.798	38.728	1261.2	165.5						ISC	bulletin
SVE	56.827	60.637	1305.4	159.5			279.5	303.5	355.5	GS	record
KAS	41.372	33.767	1345.8	171.8						ISC	bulletin
TEH	35.738	51.386	1371.8	175.5						ISC	bulletin
SHD	36.433	54.942	1385.6	176.0						ISC	bulletin
ZEL&	50.740	28.198	1479.4	184.2			329.0		401.7	CSE	record
MGN	40.925	32.181	1481.9	188.9						ISC	bulletin
KER	34.352	47.106	1501.6	193.5						ISC	bulletin
MAIO	36.308	59.472	1583.7	200.4						ISC	bulletin
VRI	45.870	26.725	1641.4	205.5						ISC	bulletin
BRV&	53.005	70.050	1648.0	207.9			368.2	390.3	461.8	CSE	record
GLP	40.289	30.309	1650.9	203.5						ISC	bulletin
BIZ	46.939	26.104	1659.9	207.5						ISC	bulletin
ISK	41.066	29.059	1688.6	211.8						ISC	bulletin
DMK	41.822	27.757	1738.0	217.1						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/29/76	05:00:00.5	47.870	48.150

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BUC	44.414	26.097	1738.4	218.5						ISC	bulletin
KHI	34.143	58.642	1755.2	222.5						ISC	bulletin
DST	39.606	28.628	1811.2	233.9						ISC	bulletin
EDC	40.347	27.863	1816.8	227.5						ISC	bulletin
BCK	37.461	30.589	1836.6	233.5						ISC	bulletin
KSA	33.823	35.890	1863.6	234.5						ISC	bulletin
DEV	45.883	22.903	1926.4	239.5						ISC	bulletin
ELL	36.748	29.908	1935.1	246.9						ISC	bulletin
EZN	39.826	26.325	1957.6	246.0						ISC	bulletin
IZM	38.398	27.263	1986.6	247.8						ISC	bulletin
PRK	39.246	26.272	1998.2	250.5						ISC	bulletin
YER	37.135	28.283	2009.5	252.0						ISC	bulletin
SOF	42.685	23.334	2018.3	253.5						ISC	bulletin
JOS	48.496	20.539	2041.2	250.5						ISC	bulletin
NIE	49.419	20.313	2044.9	252.0						ISC	bulletin
SPC	49.189	20.245	2052.6	254.5						ISC	bulletin
SHI	29.644	52.526	2054.6	256.2						ISC	bulletin
OS&	41.728	72.840	2056.3	256.7						CSE	record
NUR	60.509	24.651	2059.2	251.3			460.5			ISC	bulletin
KRA	50.058	19.940	2065.5	252.1						ISC	bulletin
ARG	36.216	28.126	2089.7	261.5						ISC	bulletin
JER	31.772	35.197	2093.9	261.0						ISC	bulletin
PLG	40.374	23.446	2131.2		264.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/29/76	05:00:00.5	47.870	48.150

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BEO	44.821	20.455	2144.5		264.5					ISC	bulletin
BUD	47.484	19.024	2172.3		269.3					ISC	bulletin
SKO	41.972	21.439	2193.1		270.9					ISC	bulletin
KJF	64.199	27.715	2197.1	266.5				498.5		ISC	bulletin
APE	37.069	25.531	2197.8		272.0					ISC	bulletin
KZN	40.307	21.771	2257.0		277.5					ISC	bulletin
ATH	37.972	23.717	2260.9		277.5					ISC	bulletin
KBL	34.541	69.043	2277.5		280.1					ISC	bulletin
OHR	41.111	20.799	2284.5		270.7					ISC	bulletin
BRA	48.168	17.105	2298.1		279.5					ISC	bulletin
EIL	29.550	34.950	2324.2		282.0					ISC	bulletin
VIE	48.248	16.362	2350.6		288.5					ISC	bulletin
VKA	48.265	16.318	2353.4		286.1					ISC	bulletin
JAN	39.657	20.851	2361.4		288.2					ISC	bulletin
UPP	59.858	17.627	2376.1		287.1					ISC	bulletin
VAM	35.407	24.200	2409.0		289.5					ISC	bulletin
RLS	38.058	21.467	2414.7		292.5					ISC	bulletin
ITM	37.180	21.927	2439.7		293.5					ISC	bulletin
ZAG	45.829	15.994	2442.6		295.9					ISC	bulletin
PRU	49.988	14.542	2450.8		295.5					ISC	bulletin
UME	63.815	20.237	2452.2		293.7					ISC	bulletin
WRS	34.150	71.400	2459.1		296.6					ISC	bulletin
PSH	33.937	71.434	2478.1		298.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/29/76	05:00:00.5	47.870	48.150

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRG	50.873	13.943	2481.7		299.3					ISC	bulletin
SOD	67.371	26.629	2493.0		297.5		544.5			ISC	bulletin
KMR	48.056	14.132	2517.2		302.5					ISC	bulletin
BRN	52.419	13.203	2520.6		301.5					ISC	bulletin
QUE	30.188	66.950	2532.0		304.8					ISC	bulletin
KHC	49.131	13.578	2534.1		303.7					ISC	bulletin
CLL	51.308	13.002	2542.7		303.3					ISC	bulletin
LJU	46.043	14.533	2544.0		304.1					ISC	bulletin
COP	55.683	12.433	2578.0		307.2					ISC	bulletin
WET	49.144	12.878	2584.1		308.1					ISC	bulletin
HFS	60.134	13.696	2593.9		307.9					ISC	bulletin
TRI	45.709	13.764	2611.9		311.0					ISC	bulletin
BHG	47.721	12.879	2616.8		311.5					ISC	bulletin
NIL	33.650	73.252	2619.4		311.4					ISC	bulletin
HOF	50.314	11.877	2634.3		312.5					ISC	bulletin
MOX	50.665	11.616	2647.3		313.5					ISC	bulletin
MNL	33.147	73.750	2691.4		318.9					ISC	bulletin
GRF	49.692	11.222	2691.6		318.7					ISC	bulletin
KEV	69.755	27.007	2692.4		316.2					ISC	bulletin
KIR	67.840	20.417	2716.0		318.4					ISC	bulletin
FUR	48.163	11.275	2721.9		320.5					ISC	bulletin
GAP	47.477	11.064	2755.6		322.8					ISC	bulletin
NAO	60.824	10.832	2766.0		321.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/29/76	05:00:00.5	47.870	48.150

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KON	59.649	9.598	2804.6		325.9					ISC	bulletin
PRG	43.101	12.397	2815.5		330.5					ISC	bulletin
MES	38.199	15.555	2835.5		329.0					ISC	bulletin
STU	48.772	9.195	2856.3		332.0					ISC	bulletin
LAH	31.550	74.333	2856.4		332.5					ISC	bulletin
FIR	43.774	11.255	2871.8		333.5					ISC	bulletin
PRT	43.880	11.094	2879.4		343.0					ISC	bulletin
CAT	37.514	15.097	2910.7		337.0					ISC	bulletin
BUH	48.676	8.228	2928.0		337.7					ISC	bulletin
ZUL	47.481	8.390	2949.7		338.5					ISC	bulletin
BNS	50.964	7.176	2951.6		339.5					ISC	bulletin
WIT	52.813	6.670	2958.1		339.5					ISC	bulletin
STR	48.585	7.766	2963.4		340.9					ISC	bulletin
WLS	48.413	7.354	2997.6		342.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/77	06:59:58.43	47.897	48.161

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BUY	42.810	47.130	570.4	79.6		94.6	137.6		161.6	GS	record
AKT	41.480	47.730	713.0	96.1		116.6	172.1		208.1	GS	record
OBN	55.115	36.568	1133.3	147.8		186.6	251.6		322.6	GS	record
SRI	36.758	49.383	1239.6	158.6						ISC	bulletin
SVE	56.827	60.637	1302.5	166.0			293.6			GS	record
KAS	41.372	33.767	1347.9	172.3						ISC	bulletin
IR1	35.416	50.689	1399.9	178.6						ISC	bulletin
MAIO	36.308	59.472	1585.5	200.6						ISC	bulletin
VRI	45.870	26.725	1642.2	207.6						ISC	bulletin
BRV&	53.005	70.050	1645.9	207.9			365.4	388.5	463.4	CSE	record
ISK	41.066	29.059	1690.4	212.6						ISC	bulletin
VOST&	52.720	70.970	1701.1	211.3			376.6	394.6	480.2	CSE	record
CHKA&	53.720	70.650	1701.8	211.7			376.9	394.7	480.8	CSE	record
MLR	45.492	25.944	1712.3	214.6				404.6		ISC	bulletin
DMK	41.822	27.757	1739.6	219.6						ISC	bulletin
BCK	37.461	30.589	1838.9		237.6					ISC	bulletin
YER	37.135	28.283	2011.7		252.9					ISC	bulletin
AKJ&	41.607	72.253	2019.2	250.8						CSE	record
SSR	44.863	21.743	2047.5	254.6						ISC	bulletin
OS&	41.728	72.840	2056.0	256.7						CSE	record
NUR	60.509	24.651	2057.4	251.6						ISC	bulletin
SHI	29.644	52.526	2057.4		256.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/77	06:59:58.43	47.897	48.161

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRA	50.058	19.940	2065.4	253.4						ISC	bulletin
VAY	41.321	22.570	2144.3		267.0					ISC	bulletin
SKO	41.972	21.439	2194.3		271.6					ISC	bulletin
KJF	64.199	27.715	2194.8	267.6			493.6			ISC	bulletin
KKS	42.076	20.411	2265.5		279.0					ISC	bulletin
KMA	42.262	20.243	2269.0		277.4					ISC	bulletin
FRZ	42.281	20.038	2283.3		279.5					ISC	bulletin
PUK	42.043	19.893	2305.6		283.1					ISC	bulletin
TLG&	43.238	77.225	2309.9		282.8					CSE	record
EIL	29.550	34.950	2327.2		282.1					ISC	bulletin
TIR	41.348	19.865	2342.5		286.6					ISC	bulletin
SOP	47.683	16.558	2349.1		287.0					ISC	bulletin
VKA	48.265	16.318	2353.5		287.0					ISC	bulletin
UPP	59.858	17.627	2374.6		287.4					ISC	bulletin
UME	63.815	20.237	2450.1		294.1					ISC	bulletin
PRU	49.988	14.542	2450.6		295.9					ISC	bulletin
WRS	34.150	71.400	2459.9		296.7					ISC	bulletin
PSH	33.937	71.434	2478.8		298.9					ISC	bulletin
BRG	50.873	13.943	2481.4		298.5					ISC	bulletin
SOD	67.371	26.629	2490.5		297.6					ISC	bulletin
MOA	47.849	14.266	2512.6		301.6					ISC	bulletin
QUE	30.188	66.950	2533.5		305.6					ISC	bulletin
KHC	49.131	13.578	2534.1		303.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/30/77	06:59:58.43	47.897	48.161

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CLL	51.308	13.002	2542.3		304.1					ISC	bulletin
LJU	46.043	14.533	2544.4		305.5					ISC	bulletin
HFS	60.134	13.696	2592.4		307.9					ISC	bulletin
MOX	50.665	11.616	2647.1		315.6					ISC	bulletin
KEV	69.755	27.007	2689.8		317.1					ISC	bulletin
GRF	49.692	11.222	2691.4		319.1					ISC	bulletin
KIR	67.840	20.417	2713.7		318.0					ISC	bulletin
KON	59.649	9.598	2803.2		326.3					ISC	bulletin
MES	38.199	15.555	2836.8		329.6					ISC	bulletin
SAL	45.607	10.526	2855.2		332.8					ISC	bulletin
TRO	69.632	18.928	2890.7		332.8					ISC	bulletin
ZUL	47.481	8.390	2949.8		338.6					ISC	bulletin
WTS	51.996	6.810	2959.1		340.6					ISC	bulletin
WLS	48.413	7.354	2997.5		343.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/78	04:59:59.06	47.850	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DBC	43.020	46.830	545.5	75.2		92.9	135.4		157.4	GS	record
BUY	42.810	47.130	564.8	78.0		93.4	127.9		156.4	GS	record
AKT	41.480	47.730	707.7	95.9		117.9	165.9		192.9	GS	record
TBZ	40.996	39.776	1008.2	132.9						ISC	bulletin
TAB	38.068	46.327	1095.0	144.9						ISC	bulletin
OBN	55.115	36.568	1135.3	145.9		184.1	251.4		322.9	GS	record
ARU	56.416	58.570	1188.1	149.1			270.5		328.6	GS	record
KVT	41.081	36.046	1216.3	156.2						ISC	bulletin
SVE	56.827	60.637	1308.5	165.9			292.9		356.9	GS	record
KAS	41.372	33.767	1342.8	171.6						ISC	bulletin
TEH	35.738	51.386	1370.2	175.9						ISC	bulletin
IR1	35.416	50.689	1395.3	178.7						ISC	bulletin
KER	34.352	47.106	1499.2	193.4						ISC	bulletin
IAS	47.193	27.562	1543.9	192.9						ISC	bulletin
CFR	45.185	28.153	1554.3	194.1						ISC	bulletin
MAIO	36.308	59.472	1583.5	199.7						ISC	bulletin
VRI	45.870	26.725	1639.1	205.9						ISC	bulletin
GPA	40.289	30.309	1648.0	209.6						ISC	bulletin
BRV&	53.005	70.050	1651.1	208.2			369.0	388.3	464.3	CSE	record
ISR	45.138	26.545	1676.0	211.4						ISC	bulletin
VOST&	52.720	70.970	1706.2	211.7			376.3	397.4	478.6	CSE	record
DMK	41.822	27.757	1735.2	216.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/78	04:59:59.06	47.850	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ALT	39.055	30.110	1745.9	221.4						ISC	bulletin
KHI	34.143	58.642	1754.6	222.4						ISC	bulletin
CMP	45.268	25.038	1784.2	224.9						ISC	bulletin
DST	39.606	28.628	1808.3	227.4						ISC	bulletin
EDC	40.347	27.863	1813.9	227.3						ISC	bulletin
BCK	37.461	30.589	1833.5	232.9						ISC	bulletin
PVL	43.217	25.333	1843.1	232.9						ISC	bulletin
KSA	33.823	35.890	1860.5	235.9				437.9		ISC	bulletin
TGI	32.963	59.193	1894.4	239.9						ISC	bulletin
KDZ	41.650	25.417	1914.4	240.9						ISC	bulletin
DEV	45.883	22.903	1924.3	238.9						ISC	bulletin
ELL	36.748	29.908	1932.0	245.9						ISC	bulletin
EZN	39.826	26.325	1954.7	245.7						ISC	bulletin
IZM	38.398	27.263	1983.6	247.9						ISC	bulletin
WAR	52.242	21.024	1986.8	243.9						ISC	bulletin
YER	37.135	28.283	2006.5	251.7						ISC	bulletin
AKJ&	41.607	72.253	2021.2	250.6						CSE	record
JOS	48.496	20.539	2039.5	250.9						ISC	bulletin
NIE	49.419	20.313	2043.3	250.9						ISC	bulletin
SPC	49.189	20.245	2050.9	254.5						ISC	bulletin
SHI	29.644	52.526	2052.9	255.9						ISC	bulletin
KARK&	41.630	72.730	2055.0	255.7						CSE	record
NUR	60.509	24.651	2059.6	251.7						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/78	04:59:59.06	47.850	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRA	50.058	19.940	2064.1	252.3						ISC	bulletin
JER	31.772	35.197	2090.7	261.4						ISC	bulletin
VAY	41.321	22.570	2140.3	265.6						ISC	bulletin
BUD	47.484	19.024	2170.5	268.2						ISC	bulletin
SKO	41.972	21.439	2190.6		270.9			518.7		ISC	bulletin
KJF	64.199	27.715	2198.0	267.1						ISC	bulletin
SRO	47.813	18.313	2215.4		272.9					ISC	bulletin
KBL	34.541	69.043	2278.1		280.4					ISC	bulletin
OHR	41.111	20.799	2281.9		280.3					ISC	bulletin
ZST	48.196	17.103	2296.0		281.0					ISC	bulletin
TLG&	43.238	77.225	2312.7		282.6					CSE	record
EIL	29.550	34.950	2321.1		281.9					ISC	bulletin
SOP	47.683	16.558	2347.1		285.6					ISC	bulletin
VIE	48.248	16.362	2348.9		286.9					ISC	bulletin
VKA	48.265	16.318	2351.7		286.8					ISC	bulletin
UPP	59.858	17.627	2376.1		287.4					ISC	bulletin
BLY	44.749	17.184	2389.3		289.6					ISC	bulletin
ZAG	45.829	15.994	2440.7		295.3					ISC	bulletin
PRU	49.988	14.542	2449.3		295.9					ISC	bulletin
UME	63.815	20.237	2452.8		294.2					ISC	bulletin
WRS	34.150	71.400	2459.9		296.2					ISC	bulletin
PSH	33.937	71.434	2478.9		298.7					ISC	bulletin
BRG	50.873	13.943	2480.4		298.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/78	04:59:59.06	47.850	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SOD	67.371	26.629	2494.2		297.7					ISC	bulletin
MOA	47.849	14.266	2510.7		301.5					ISC	bulletin
KMR	48.056	14.132	2515.5		302.3					ISC	bulletin
BRN	52.419	13.203	2519.5		302.0					ISC	bulletin
QUE	30.188	66.950	2532.1		304.9					ISC	bulletin
KHC	49.131	13.578	2532.6		303.5					ISC	bulletin
CLL	51.308	13.002	2541.4		303.7					ISC	bulletin
LJU	46.043	14.533	2542.0		303.6					ISC	bulletin
BRT	40.878	17.204	2560.6		304.4					ISC	bulletin
COP	55.683	12.433	2577.3		307.2					ISC	bulletin
WET	49.144	12.878	2582.5		308.0					ISC	bulletin
HFS	60.134	13.696	2593.9		308.1					ISC	bulletin
RBL	46.442	13.568	2600.8		309.7					ISC	bulletin
TRI	45.709	13.764	2610.0		311.3					ISC	bulletin
BHG	47.721	12.879	2615.1		311.2					ISC	bulletin
NIL	33.650	73.252	2620.3		312.9					ISC	bulletin
HOF	50.314	11.877	2632.9		312.4					ISC	bulletin
UDI	46.065	13.237	2637.3		313.4					ISC	bulletin
UDN	46.063	13.237	2637.3		312.7					ISC	bulletin
MOX	50.665	11.616	2646.0		313.9					ISC	bulletin
FGG	41.450	15.551	2654.6		315.4					ISC	bulletin
OR1	40.064	16.449	2660.0		315.9					ISC	bulletin
RCL	46.160	12.653	2677.2		315.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/78	04:59:59.06	47.850	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RE1	46.160	12.653	2677.2		315.9					ISC	bulletin
GRF	49.692	11.222	2690.1		318.9					ISC	bulletin
MNL	33.147	73.750	2692.3		319.4					ISC	bulletin
KEV	69.755	27.007	2693.8		316.9					ISC	bulletin
KIR	67.840	20.417	2717.1		318.8					ISC	bulletin
FUR	48.163	11.275	2720.2		320.9					ISC	bulletin
HAM	53.465	9.925	2734.7		321.9					ISC	bulletin
NB2	61.040	11.215	2752.1		321.7					ISC	bulletin
GAP	47.477	11.064	2753.9		322.9					ISC	bulletin
AQU	42.354	13.403	2771.8		324.4					ISC	bulletin
OVO	40.827	14.398	2772.2		325.9					ISC	bulletin
OGA	46.868	11.025	2774.6		324.1					ISC	bulletin
DPS	40.610	14.365	2785.9		325.9					ISC	bulletin
KON	59.649	9.598	2804.4		326.1					ISC	bulletin
PRG	43.101	12.397	2813.3		330.9					ISC	bulletin
MNS	42.385	12.680	2824.5		328.3					ISC	bulletin
MES	38.199	15.555	2832.9		328.5					ISC	bulletin
BSL	43.980	11.434	2847.9		330.2					ISC	bulletin
RMP	41.811	12.702	2849.9		330.9					ISC	bulletin
SAL	45.607	10.526	2853.0		330.7					ISC	bulletin
STU	48.772	9.195	2854.8		331.6					ISC	bulletin
LAH	31.550	74.333	2857.3		333.9					ISC	bulletin
FIR	43.774	11.255	2869.8		333.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/78	04:59:59.06	47.850	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PRT	43.880	11.094	2877.4		322.9					ISC	bulletin
TRO	69.632	18.928	2894.3		333.4					ISC	bulletin
CAT	37.514	15.097	2908.1		335.9					ISC	bulletin
BUB	47.749	8.603	2924.8		337.3					ISC	bulletin
BUH	48.676	8.228	2926.5		337.7					ISC	bulletin
ZUL	47.481	8.390	2948.1		338.9					ISC	bulletin
WIT	52.813	6.670	2957.1		339.9					ISC	bulletin
GIB	37.989	14.027	2958.0		339.9					ISC	bulletin
WTS	51.996	6.810	2958.5		340.4					ISC	bulletin
STR	48.585	7.766	2961.9		340.7					ISC	bulletin
WLS	48.413	7.354	2996.1		342.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/18/78	7:59:58.50	47.860	48.160

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	545.0	75.9		90.5	133.5		156.5	GS	record
MAK	42.961	47.505	546.2	76.5						GS	bulletin
DBC	43.020	46.830	547.2	75.9		92.0	134.0		158.5	GS	record
BUY	42.810	47.130	566.3	79.5		93.1	143.5		164.5	GS	record
PYA	44.033	43.058	580.0	79.7						GS	bulletin
AKT	41.480	47.730	708.9	96.5						GS	record
BKR	41.733	43.517	772.4	102.5						GS	bulletin
SOC	43.583	39.720	809.3	109.0						GS	bulletin
KRV	40.647	46.319	813.8	107.5						GS	bulletin
BAK	40.383	49.900	841.3	114.5						GS	bulletin
ERE	40.170	44.470	902.8	119.7						GS	bulletin
GRS	39.500	46.330	939.2	123.3						GS	bulletin
TBZ	40.996	39.776	1011.1	132.0						ISC	bulletin
TAB	38.068	46.327	1096.6	145.5						ISC	bulletin
SIM	44.949	34.116	1124.3	146.5			260.5			GS	bulletin
MOS	55.738	37.625	1135.2	147.5						GS	bulletin
OBN	55.115	36.568	1136.4	145.8						GS	bulletin
OBN	55.115	36.568	1136.4	146.5		185.0	259.5		320.5	GS	record
ARU	56.416	58.570	1185.6	150.2						GS	bulletin
KVT	41.081	36.046	1219.4	157.5						ISC	bulletin
SVE	56.827	60.637	1305.9	163.2			291.5		360.5	GS	record
SVE	56.827	60.637	1305.9	165.0						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/18/78	7:59:58.50	47.860	48.160

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
IR7	35.703	50.609	1363.5	175.3						ISC	bulletin
TEH	35.738	51.386	1370.6	177.8						ISC	bulletin
SHD	36.433	54.942	1384.3	176.5						ISC	bulletin
KIS	46.998	28.818	1457.1	183.5						GS	bulletin
KER	34.352	47.106	1500.5	193.5						ISC	bulletin
IAS	47.193	27.562	1546.8	195.5						ISC	bulletin
MAIO	36.308	59.472	1582.4	200.1						ISC	bulletin
VRI	45.870	26.725	1642.1	205.5						ISC	bulletin
BRV&	53.005	70.050	1647.9	207.8			368.6	384.8	469.9	CSE	record
GPA	40.289	30.309	1651.1	209.6						ISC	bulletin
BIZ	46.939	26.104	1660.7	209.0						ISC	bulletin
ISK	41.066	29.059	1689.0	212.2						ISC	bulletin
VOST&	52.720	70.970	1703.1	211.9			378.2	398.3	483.8	CSE	record
CHKA&	53.720	70.650	1704.0	212.1			378.6	398.5	483.9	CSE	record
MLR	45.492	25.944	1712.2	216.5						ISC	bulletin
BUC	44.414	26.097	1739.0	220.5						ISC	bulletin
ALT	39.055	30.110	1749.1	222.5						ISC	bulletin
KHI	34.143	58.642	1753.9	222.9						ISC	bulletin
SAM	39.660	66.950	1757.1	219.7						GS	bulletin
PUL	59.773	30.324	1758.9	218.5			388.5			GS	bulletin
PUL	59.773	30.324	1758.9	219.0			388.5		502.5	GS	record
LVV	49.819	24.031	1775.1	221.2						GS	bulletin
CMP	45.268	25.038	1787.2	226.5						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/18/78	7:59:58.50	47.860	48.160

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DST	39.606	28.628	1811.5	228.3						ISC	bulletin
ARR	45.368	24.634	1814.1	227.0						ISC	bulletin
EDC	40.347	27.863	1817.1	228.1						ISC	bulletin
PVL	43.217	25.333	1846.2	233.5						ISC	bulletin
KSA	33.823	35.890	1863.2	235.5						ISC	bulletin
LOT	45.448	23.769	1876.1	233.7						ISC	bulletin
TGI	32.963	59.193	1893.6	239.0						ISC	bulletin
UZH	48.631	22.293	1912.0	237.5						GS	bulletin
KDZ	41.650	25.417	1917.5	241.5						ISC	bulletin
DEV	45.883	22.903	1927.3	240.5						ISC	bulletin
ELL	36.748	29.908	1935.1	245.2						ISC	bulletin
GZR	45.393	22.777	1952.1	243.5						ISC	bulletin
DSH	38.570	68.760	1954.6	245.5				443.5		GS	bulletin
AKJ&	41.607	72.253	2018.5	250.8						CSE	record
SOF	42.685	23.334	2018.9	254.5						ISC	bulletin
GAR	39.000	70.320	2033.5	254.4						GS	bulletin
JOS	48.496	20.539	2042.1	251.5						ISC	bulletin
NIE	49.419	20.313	2045.9	252.0						ISC	bulletin
SSA	44.863	21.743	2047.5	253.5						ISC	bulletin
KARK&	41.630	72.730	2052.3	256.1						CSE	record
SHI	29.644	52.526	2053.4	256.5						ISC	bulletin
SPC	49.189	20.245	2053.6	255.3						ISC	bulletin
TIM	45.737	21.222	2057.2	258.5						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/18/78	7:59:58.50	47.860	48.160

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NUR	60.509	24.651	2060.5	252.4			446.5			ISC	bulletin
KRA	50.058	19.940	2066.6	253.5						ISC	bulletin
KUL	37.900	69.780	2070.6	258.3				470.8		GS	bulletin
ANR	40.750	72.370	2073.6	258.0						GS	bulletin
JER	31.772	35.197	2093.4	262.0						ISC	bulletin
FRU	42.830	74.620	2133.6	264.3						GS	bulletin
VAY	41.321	22.570	2143.5		266.7					ISC	bulletin
BEO	44.821	20.455	2145.2		265.5					ISC	bulletin
BUD	47.484	19.024	2173.3		268.7					ISC	bulletin
SKO	41.972	21.439	2193.7		272.2					ISC	bulletin
KJF	64.199	27.715	2198.4	267.8			479.5			ISC	bulletin
SRO	47.813	18.313	2218.1		274.5					ISC	bulletin
KHO	37.480	71.530	2219.8		277.5			504.5		GS	bulletin
ATH	37.972	23.717	2261.2		274.5					ISC	bulletin
KBL	34.541	69.043	2276.2		281.2					ISC	bulletin
ZST	48.196	17.103	2298.6		282.1					ISC	bulletin
NRN	41.430	76.000	2303.9		277.4					GS	bulletin
TLG&	43.238	77.225	2309.8	283.3						CSE	record
AAB	43.230	77.230	2310.5		283.5					GS	bulletin
EIL	29.550	34.950	2323.7		282.5					ISC	bulletin
SEM	50.400	80.250	2338.3		285.0					GS	bulletin
APA	67.558	33.442	2347.1		284.3					GS	bulletin
SOP	47.683	16.558	2349.8		287.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/18/78	7:59:58.50	47.860	48.160

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VIE	48.248	16.362	2351.6		287.5					ISC	bulletin
VKA	48.265	16.318	2354.4		287.6					ISC	bulletin
UPP	59.858	17.627	2377.5		288.4					ISC	bulletin
PRZ	42.480	78.400	2431.5		295.5					GS	bulletin
ZAG	45.829	15.994	2443.5		296.6					ISC	bulletin
PRU	49.988	14.542	2451.8		296.5					ISC	bulletin
UME	63.815	20.237	2453.5		294.9					ISC	bulletin
HLW	29.858	31.342	2459.3		296.5					ISC	bulletin
BRG	50.873	13.943	2482.8		299.3					ISC	bulletin
SOD	67.371	26.629	2494.3		298.3					ISC	bulletin
MOA	47.849	14.266	2513.4		302.5					ISC	bulletin
KMR	48.056	14.132	2518.2		303.4					ISC	bulletin
BRN	52.419	13.203	2521.7		302.5					ISC	bulletin
NVS	54.850	83.266	2533.5		303.5					GS	bulletin
KHC	49.131	13.578	2535.1		304.5					ISC	bulletin
CLL	51.308	13.002	2543.8		304.5					ISC	bulletin
LJU	46.043	14.533	2544.9		305.4					ISC	bulletin
BRT	40.878	17.204	2563.7		306.5					ISC	bulletin
COP	55.683	12.433	2579.2		307.9					ISC	bulletin
TTI	40.408	17.283	2582.6		307.5					ISC	bulletin
WET	49.144	12.878	2585.1		308.8					ISC	bulletin
HFS	60.134	13.696	2595.2		308.8					ISC	bulletin
TRI	45.709	13.764	2612.8		311.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/18/78	7:59:58.50	47.860	48.160

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BHG	47.721	12.879	2617.7		312.1					ISC	bulletin
HOF	50.314	11.877	2635.4		313.6					ISC	bulletin
MOX	50.665	11.616	2648.4		314.7					ISC	bulletin
OR1	40.064	16.449	2663.1		316.0					ISC	bulletin
GRB1	49.392	11.654	2667.8		317.2					ISC	bulletin
KEV	69.755	27.007	2693.7		317.4					ISC	bulletin
KIR	67.840	20.417	2717.4		319.5					ISC	bulletin
ACI	39.351	16.203	2721.0		321.5					ISC	bulletin
FUR	48.163	11.275	2722.9		321.9					ISC	bulletin
ELT	53.253	86.277	2730.0		320.5					GS	bulletin
HAM	53.465	9.925	2736.8		322.5					ISC	bulletin
PRO	43.917	12.917	2742.9		325.5					ISC	bulletin
NB2	61.040	11.215	2753.4		322.1					ISC	bulletin
CTI	46.048	11.650	2757.7		325.3					ISC	bulletin
OGA	46.868	11.025	2777.4		325.2					ISC	bulletin
CVI	38.592	15.904	2786.9		326.3					ISC	bulletin
KON	59.649	9.598	2805.9		326.8					ISC	bulletin
PRG	43.101	12.397	2816.3		330.5					ISC	bulletin
MNS	42.385	12.680	2827.4		329.5					ISC	bulletin
OII	38.153	15.689	2828.9		329.9					ISC	bulletin
MES	38.199	15.555	2836.0		330.5					ISC	bulletin
BSL	43.980	11.434	2850.8		332.5					ISC	bulletin
RMP	41.811	12.702	2852.9		332.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/18/78	7:59:58.50	47.860	48.160

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SAL	45.607	10.526	2855.8		331.5					ISC	bulletin
STU	48.772	9.195	2857.4		272.5					ISC	bulletin
FIR	43.774	11.255	2872.7		333.5					ISC	bulletin
NOV	38.028	15.137	2877.1		333.0					ISC	bulletin
TNS	50.222	8.447	2878.2		334.2					ISC	bulletin
PRT	43.880	11.094	2880.2		331.5					ISC	bulletin
TRO	69.632	18.928	2894.4		333.8					ISC	bulletin
ACL	38.533	14.356	2904.7		334.8					ISC	bulletin
CAT	37.514	15.097	2911.2		336.0					ISC	bulletin
BUB	47.749	8.603	2927.4		338.0					ISC	bulletin
ZUL	47.481	8.390	2950.7		339.5					ISC	bulletin
WIT	52.813	6.670	2959.3		340.0					ISC	bulletin
WTS	51.996	6.810	2960.7		341.2					ISC	Bulletin
GIB	37.989	14.027	2961.2		340.0					ISC	Bulletin
STR	48.585	7.766	2964.5		341.9					ISC	Bulletin
WLS	48.413	7.354	2998.6		343.7					ISC	Bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/17/79	07:59:58.5	47.920	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	550.8	76.0		91.3	134.0		158.5	GS	record
PYA	44.033	43.058	582.6	79.1						GS	bulletin
DRN	42.030	48.330	654.0	88.5		108.0	159.5			GS	record
BKR	41.733	43.517	776.7	103.5						GS	bulletin
SOC	43.583	39.720	810.4	107.5						GS	bulletin
KRV	40.647	46.319	819.8	107.5						GS	bulletin
ERE	40.170	44.470	908.0	118.5						GS	bulletin
GRS	39.500	46.330	945.3	123.5						GS	bulletin
TAB	38.068	46.327	1102.7	145.0						ISC	bulletin
SIM	44.949	34.116	1122.7	143.6				259.5		GS	bulletin
MOS	55.738	37.625	1128.0	144.5						GS	bulletin
OBN	55.115	36.568	1129.4	146.0						GS	bulletin
OBN	55.115	36.568	1129.4	146.0		184.5	258.5		323.0	GS	record
ARU	56.416	58.570	1181.6	148.7		183.2	267.7		329.7	GS	record
KAT	39.028	56.270	1184.7	152.5						GS	bulletin
SVE	56.827	60.637	1302.2	164.0						GS	bulletin
SVE	56.827	60.637	1302.2	164.5			291.5			GS	record
ASH	37.950	58.350	1382.7	176.3						GS	bulletin
KIS	46.998	28.818	1453.7	183.5						GS	bulletin
IAS	47.193	27.562	1543.2	194.5						ISC	bulletin
CFR	45.185	28.153	1554.8	195.5						ISC	bulletin
VRI	45.870	26.725	1639.1	206.5						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/17/79	07:59:58.5	47.920	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRV&	53.005	70.050	1647.4	207.5			368.3	384.5	469.5	CSE	record
ISR	45.138	26.545	1676.3	209.7						ISC	bulletin
ISK	41.066	29.059	1688.4	211.3						ISC	bulletin
VOST&	52.720	70.970	1702.7	211.2			377.9	397.6	483.6	CSE	record
MLR	45.492	25.944	1709.3	214.5						ISC	bulletin
PUL	59.773	30.324	1751.7	217.5			387.5			GS	bulletin
LVV	49.819	24.031	1770.4	217.5						GS	bulletin
CMP	45.268	25.038	1784.3	224.5						ISC	bulletin
UZH	48.631	22.293	1907.7	237.0						GS	bulletin
KDZ	41.650	25.417	1916.1	239.5						ISC	bulletin
DEV	45.883	22.903	1923.9	238.5						ISC	bulletin
DSH	38.570	68.760	1960.1	245.8						GS	bulletin
AKJ&	41.607	72.253	2022.7	250.8						CSE	record
JOS	48.496	20.539	2037.8	249.9			457.5			ISC	bulletin
GAR	39.000	70.320	2038.7	253.9						GS	bulletin
NIE	49.419	20.313	2041.3	252.0						ISC	bulletin
SSA	44.863	21.743	2044.4	253.5						ISC	bulletin
SPC	49.189	20.245	2049.0	253.0						ISC	bulletin
NUR	60.509	24.651	2053.5	250.7						ISC	bulletin
KARK&	41.630	72.730	2056.5	255.1						CSE	record
SHI	29.644	52.526	2060.5	256.5						ISC	bulletin
KRA	50.058	19.940	2061.8	251.5						ISC	bulletin
KUL	37.900	69.780	2076.1	258.0						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/17/79	07:59:58.5	47.920	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ANR	40.750	72.370	2078.1	257.7						GS	bulletin
JER	31.772	35.197	2097.0	262.0						ISC	bulletin
FRU	42.830	74.620	2137.2	262.6			468.0			GS	bulletin
VAY	41.321	22.570	2141.7		265.9					ISC	bulletin
BEO	44.821	20.455	2142.1		265.0					ISC	bulletin
KJF	64.199	27.715	2191.1	266.0						ISC	bulletin
SKO	41.972	21.439	2191.6		270.7					ISC	bulletin
SRO	47.813	18.313	2213.9		272.5					ISC	bulletin
ATH	37.972	23.717	2260.7		277.8					ISC	bulletin
KBL	34.541	69.043	2282.4		281.5					ISC	bulletin
ZST	48.196	17.103	2294.3		280.8					ISC	bulletin
TLG&	43.238	77.225	2313.0		282.8					CSE	record
AAB	43.230	77.230	2313.7		282.5					GS	bulletin
SEM	50.400	80.250	2339.0		284.1					GS	bulletin
APA	67.558	33.442	2339.9		282.5					GS	bulletin
SOP	47.683	16.558	2345.6		285.8					ISC	bulletin
VIE	48.248	16.362	2347.2		286.5					ISC	bulletin
VKA	48.265	16.318	2350.0		286.3					ISC	bulletin
UPP	59.858	17.627	2370.6		286.4					ISC	bulletin
PRZ	42.480	78.400	2434.8		294.8					GS	bulletin
ZAG	45.829	15.994	2439.8		294.9					ISC	bulletin
UME	63.815	20.237	2446.3		293.5					ISC	bulletin
PRU	49.988	14.542	2446.9		295.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/17/79	07:59:58.5	47.920	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PRA	50.070	14.433	2453.4		295.8					ISC	bulletin
HLW	29.858	31.342	2462.2		295.0					ISC	bulletin
BRG	50.873	13.943	2477.7		298.4					ISC	bulletin
SOD	67.371	26.629	2487.0		296.5					ISC	bulletin
MOA	47.849	14.266	2509.0		301.5					ISC	bulletin
BRN	52.419	13.203	2516.2		300.5					ISC	bulletin
KHC	49.131	13.578	2530.4		303.2					ISC	bulletin
NVS	54.850	83.266	2532.6		301.8					GS	bulletin
CLL	51.308	13.002	2538.5		302.8					ISC	bulletin
LJU	46.043	14.533	2541.0		303.9					ISC	bulletin
CEY	45.739	14.427	2558.9		306.1					ISC	bulletin
COP	55.683	12.433	2573.1		306.4					ISC	bulletin
WET	49.144	12.878	2580.4		307.5					ISC	bulletin
HFS	60.134	13.696	2588.4		307.2					ISC	bulletin
TRI	45.709	13.764	2609.0		310.2					ISC	bulletin
BHG	47.721	12.879	2613.4		310.8					ISC	bulletin
HOF	50.314	11.877	2630.3		311.9					ISC	bulletin
MOX	50.665	11.616	2643.3		313.0					ISC	bulletin
FGG	41.450	15.551	2655.1		316.5					ISC	bulletin
KEV	69.755	27.007	2686.4		315.2					ISC	bulletin
GRF	49.692	11.222	2687.7		318.3					ISC	bulletin
KIR	67.840	20.417	2710.1		317.7					ISC	bulletin
FUR	48.163	11.275	2718.3		320.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/17/79	07:59:58.5	47.920	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ACI	39.351	16.203	2719.0		320.5					ISC	bulletin
ELT	53.253	86.277	2729.7		310.9					GS	bulletin
GAP	47.477	11.064	2752.2		322.4					ISC	bulletin
CTI	46.048	11.650	2753.6		321.5					ISC	bulletin
NAO	60.824	10.832	2760.5		321.5					ISC	bulletin
AQU	42.354	13.403	2771.8		324.0					ISC	bulletin
OGA	46.868	11.025	2773.1		323.9					ISC	bulletin
KON	59.649	9.598	2799.2		325.3					ISC	bulletin
PRG	43.101	12.397	2813.0		331.0					ISC	bulletin
MNS	42.385	12.680	2824.4		328.5					ISC	bulletin
OII	38.153	15.689	2827.1		329.0					ISC	bulletin
MES	38.199	15.555	2834.2		328.5					ISC	bulletin
BSL	43.980	11.434	2847.2		331.0					ISC	bulletin
RMP	41.811	12.702	2849.9		329.5					ISC	bulletin
SAL	45.607	10.526	2851.8		330.3					ISC	bulletin
STU	48.772	9.195	2852.6		331.2					ISC	bulletin
FIR	43.774	11.255	2869.1		333.0					ISC	bulletin
TNS	50.222	8.447	2873.1		333.2					ISC	bulletin
PRT	43.880	11.094	2876.7		332.5					ISC	bulletin
TRO	69.632	18.928	2887.1		332.3					ISC	bulletin
BUB	47.749	8.603	2922.8		336.5					ISC	bulletin
BUH	48.676	8.228	2924.2		336.2					ISC	bulletin
PCN	45.050	9.667	2935.9		339.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/17/79	07:59:58.5	47.920	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZUL	47.481	8.390	2946.2		338.0					ISC	bulletin
BVT	44.486	9.775	2949.9		338.9					ISC	bulletin
WIT	52.813	6.670	2953.7		339.7					ISC	bulletin
WTS	51.996	6.810	2955.2		339.6					ISC	bulletin
STR	48.585	7.766	2959.7		340.5					ISC	bulletin
WLS	48.413	7.354	2993.9		342.3					ISC	bulletin
CDF	48.412	7.276	2999.5		343.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/14/79	04:59:58.0	47.880	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GRO	43.320	45.750	538.8	75.0						GS	bulletin
MAK	42.961	47.505	548.2	76.6			131.0			GS	bulletin
BUY	42.810	47.130	568.1	77.7		93.0	139.0		156.5	GS	record
PYA	44.033	43.058	579.5	78.0						GS	bulletin
BKR	41.733	43.517	772.8	102.0						GS	bulletin
NOVT&	50.460	58.000	774.0	100.4		124.1	179.8		211.2	CSE	record
SOC	43.583	39.720	808.0	107.9						GS	bulletin
KRV	40.647	46.319	815.4	107.0						GS	bulletin
ERE	40.170	44.470	903.9	119.8						GS	bulletin
TBZ	40.996	39.776	1010.6	132.2						ISC	bulletin
TAB	38.068	46.327	1098.3	145.0						ISC	bulletin
SIM	44.949	34.116	1121.8	145.0			259.0			GS	bulletin
MOS	55.738	37.625	1131.6	145.0						GS	bulletin
OBN	55.115	36.568	1132.8	145.0		184.0	254.0		322.0	GS	record
KAT	39.028	56.270	1181.2	152.0						GS	bulletin
ARU	56.416	58.570	1185.4	151.4			269.6		327.6	GS	record
SVE	56.827	60.637	1305.8	165.0						GS	bulletin
SVE	56.827	60.637	1305.8	165.0			295.0			GS	record
KAS	41.372	33.767	1344.4	171.2						ISC	bulletin
TEH	35.738	51.386	1373.4	176.0						ISC	bulletin
ASH	37.950	58.350	1379.3	176.6						GS	bulletin
KIS	46.998	28.818	1454.0	184.0						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/14/79	04:59:58.0	47.880	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KER	34.352	47.106	1502.6	193.5						ISC	bulletin
CFR	45.185	28.153	1554.5	214.0						ISC	bulletin
MAIO	36.308	59.472	1586.0	199.5			349.0			ISC	bulletin
BAC	46.567	26.900	1607.0	201.0						ISC	bulletin
VRI	45.870	26.725	1639.1	205.0						ISC	bulletin
KLT	40.643	30.101	1640.6	207.0						ISC	bulletin
GPA	40.289	30.309	1649.3	208.5						ISC	bulletin
BRV&	53.005	70.050	1649.5	207.7			368.9	384.9	469.9	CSE	record
BIZ	46.939	26.104	1657.5	202.0						ISC	bulletin
BRV	53.083	70.250	1664.3	207.5						GS	bulletin
ISR	45.138	26.545	1676.1	206.0						ISC	bulletin
ISK	41.066	29.059	1686.9	204.7						ISC	bulletin
VOST&	52.720	70.970	1704.7	211.1			378.2	398.9	484.2	CSE	record
DMK	41.822	27.757	1736.1	217.3						ISC	bulletin
BUC	44.414	26.097	1736.2	218.0						ISC	bulletin
BKT	40.142	29.136	1739.4	219.0						ISC	bulletin
PUL	59.773	30.324	1755.4	218.0			391.0			GS	bulletin
KHI	34.143	58.642	1757.4	222.7						ISC	bulletin
SAM	39.660	66.950	1760.7	220.5						GS	bulletin
LVV	49.819	24.031	1771.6	219.0						GS	bulletin
CMP	45.268	25.038	1784.2	225.0						ISC	bulletin
DST	39.606	28.628	1809.6	227.6						ISC	bulletin
ARR	45.368	24.634	1811.2	225.0						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/14/79	04:59:58.0	47.880	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MFT	40.787	27.281	1829.4	228.5						ISC	bulletin
BMR	47.673	23.497	1835.9	228.0						ISC	bulletin
PVL	43.217	25.333	1843.6	231.0						ISC	bulletin
GET	40.108	27.567	1850.8	237.0						ISC	bulletin
LOT	45.448	23.769	1873.1	232.8						ISC	bulletin
UZH	48.631	22.293	1908.6	236.5						GS	bulletin
KDZ	41.650	25.417	1915.1	240.0						ISC	bulletin
DEV	45.883	22.903	1924.2	239.0						ISC	bulletin
ELL	36.748	29.908	1933.8	245.9						ISC	bulletin
GZR	45.393	22.777	1949.0	243.0						ISC	bulletin
EZN	39.826	26.325	1955.8		245.7					ISC	bulletin
DSH	38.570	68.760	1958.3	244.3						GS	bulletin
IZM	38.398	27.263	1985.0	248.0						ISC	bulletin
AKJ&	41.607	72.253	2021.9	250.7						CSE	record
GAR	39.000	70.320	2037.1	254.0						GS	bulletin
JOS	48.496	20.539	2038.8	250.0						ISC	bulletin
SSA	44.863	21.743	2044.5		260.0					ISC	bulletin
SPC	49.189	20.245	2050.1	254.3						ISC	bulletin
KARK&	41.630	72.730	2055.7	256.5						CSE	record
SHI	29.644	52.526	2056.2	256.3						ISC	bulletin
NUR	60.509	24.651	2056.9	251.0						ISC	bulletin
KRA	50.058	19.940	2063.1	251.5						ISC	bulletin
KUL	37.900	69.780	2074.3	257.5						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/14/79	04:59:58.0	47.880	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ANR	40.750	72.370	2077.1	257.2						GS	bulletin
FRU	42.830	74.620	2136.8	264.0						GS	bulletin
BEO	44.821	20.455	2142.2		266.0					ISC	bulletin
BUD	47.484	19.024	2169.9	267.0						ISC	bulletin
SKO	41.972	21.439	2191.1		270.6					ISC	bulletin
KJF	64.199	27.715	2195.1	266.0						ISC	bulletin
KHO	37.480	71.530	2223.4		275.3					GS	bulletin
ATH	37.972	23.717	2259.1		278.0					ISC	bulletin
KBL	34.541	69.043	2279.9		281.5					ISC	bulletin
OHR	41.111	20.799	2282.4		279.6					ISC	bulletin
ZST	48.196	17.103	2295.2		281.4					ISC	bulletin
NRN	41.430	76.000	2307.2		282.0					GS	bulletin
TLG&	43.238	77.225	2312.9		282.9					CSE	record
AAB	43.230	77.230	2313.6		283.0					GS	bulletin
EIL	29.550	34.950	2323.9		282.5					ISC	bulletin
SEM	50.400	80.250	2340.4		284.4					GS	bulletin
APA	67.558	33.442	2344.1		283.2					GS	bulletin
SOP	47.683	16.558	2346.4		285.1					ISC	bulletin
VIE	48.248	16.362	2348.1		288.0					ISC	bulletin
VKA	48.265	16.318	2350.9		286.0					ISC	bulletin
UPP	59.858	17.627	2373.8		286.7					ISC	bulletin
BLY	44.749	17.184	2389.1		283.6					ISC	bulletin
PRU	49.988	14.542	2448.3		295.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/14/79	04:59:58.0	47.880	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UME	63.815	20.237	2450.0		294.0					ISC	bulletin
PRA	50.070	14.433	2454.8		296.0					ISC	bulletin
HLW	29.858	31.342	2458.9		296.0					ISC	bulletin
BRG	50.873	13.943	2479.2		298.1					ISC	bulletin
SOD	67.371	26.629	2491.1		296.8					ISC	bulletin
MOA	47.849	14.266	2510.0		301.4					ISC	bulletin
KHC	49.131	13.578	2531.6		303.5					ISC	bulletin
NVS	54.850	83.266	2534.9		303.0					GS	bulletin
CLL	51.308	13.002	2540.2		303.2					ISC	bulletin
LJU	46.043	14.533	2541.6		304.6					ISC	bulletin
CEY	45.739	14.427	2559.5		306.6					ISC	bulletin
BRT	40.878	17.204	2560.9		305.0					ISC	bulletin
COP	55.683	12.433	2575.5		306.6					ISC	bulletin
WET	49.144	12.878	2581.6		307.8					ISC	bulletin
HFS	60.134	13.696	2591.5		307.7					ISC	bulletin
TRI	45.709	13.764	2609.6		310.5					ISC	bulletin
BHG	47.721	12.879	2614.3		311.2					ISC	bulletin
HOF	50.314	11.877	2631.8		312.4					ISC	bulletin
MOX	50.665	11.616	2644.8		313.0					ISC	bulletin
GRF	49.692	11.222	2689.1		318.5					ISC	bulletin
KEV	69.755	27.007	2690.6		316.0					ISC	bulletin
KIR	67.840	20.417	2714.1		318.0					ISC	bulletin
FUR	48.163	11.275	2719.4		320.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/14/79	04:59:58.0	47.880	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ELT	53.253	86.277	2731.7		319.9					GS	bulletin
ALP	42.780	13.576	2739.4		321.5					ISC	bulletin
SGG	41.387	14.379	2745.4		322.9					ISC	bulletin
NB2	61.040	11.215	2749.8		320.5					ISC	bulletin
GAP	47.477	11.064	2753.2		322.6					ISC	bulletin
CTI	46.048	11.650	2754.4		320.0					ISC	bulletin
NAO	60.824	10.832	2763.6		322.3					ISC	bulletin
DPS	40.610	14.365	2786.1		325.6					ISC	bulletin
KON	59.649	9.598	2802.1		325.8					ISC	bulletin
PRG	43.101	12.397	2813.2		324.0					ISC	bulletin
MNS	42.385	12.680	2824.4		328.5					ISC	bulletin
OII	38.153	15.689	2826.3		325.0					ISC	bulletin
MES	38.199	15.555	2833.4		328.5					ISC	bulletin
BSL	43.980	11.434	2847.6		331.8					ISC	bulletin
SAL	45.607	10.526	2852.5		330.5					ISC	bulletin
LLI	38.445	14.948	2863.5		332.0					ISC	bulletin
VPL	38.379	14.984	2864.8		331.0					ISC	bulletin
NOV	38.028	15.137	2874.5		332.5					ISC	bulletin
TNS	50.222	8.447	2874.6		333.1					ISC	bulletin
TRO	69.632	18.928	2891.2		332.8					ISC	bulletin
ACL	38.533	14.356	2902.1		334.4					ISC	bulletin
BUB	47.749	8.603	2924.0		337.0					ISC	bulletin
ZUL	47.481	8.390	2947.3		338.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/14/79	04:59:58.0	47.880	48.120

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
WIT	52.813	6.670	2955.6		340.0					ISC	bulletin
WTS	51.996	6.810	2957.1		340.2					ISC	bulletin
GIB	37.989	14.027	2958.6		339.0					ISC	bulletin
WLS	48.413	7.354	2995.1		343.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/24/79	05:59:59.0	47.850	48.140

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GRO	43.3	45.8	536.2	75.4						GS	bulletin
MAK	43.0	47.5	545.0	76.5			134.0			GS	bulletin
BUY	42.8	47.1	565.0	78.4		91.4	131.0		161.0	GS	record
PYA	44.0	43.1	578.1	78.7						GS	bulletin
AKT	41.5	47.7	707.7	96.2		116.5	169.0		194.0	GS	record
BKR	41.7	43.5	770.7	103.0						GS	bulletin
NOVT&	50.5	58.0	774.1	101.7		124.7	177.7		209.6	CSE	record
SHE	40.6	48.6	800.5	107.0						GS	bulletin
SOC	43.6	39.7	807.4	108.2						GS	bulletin
KRV	40.6	46.3	812.4	107.0						GS	bulletin
ERE	40.2	44.5	901.2	120.5						GS	bulletin
GRS	39.5	46.3	937.9	122.4						GS	bulletin
TBZ	41.0	39.8	1009.3	132.5						ISC	bulletin
TAB	38.1	46.3	1095.2	145.0						ISC	bulletin
SIM	44.9	34.1	1122.6	145.0						GS	bulletin
MOS	55.7	37.6	1135.2	146.0						GS	bulletin
OBN	55.1	36.6	1136.3	146.0						GS	bulletin
OBN	55.1	36.6	1136.3	146.4		185.0	256.0		323.0	GS	record
KAT	39.0	56.3	1177.6	152.5						GS	bulletin
ARU	56.4	58.6	1187.3	149.5			266.8		329.2	GS	record
ARU	56.4	58.6	1187.3	150.6			267.6			GS	bulletin
KVT	41.1	36.0	1217.6	157.3						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/24/79	05:59:59.0	47.850	48.140

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.8	60.6	1307.6	166.0			291.0		359.0	GS	record
SVE	56.8	60.6	1307.6	166.0			293.0			GS	bulletin
KAS	41.4	33.8	1344.2	172.0						ISC	bulletin
TEH	35.7	51.4	1369.8	178.0						ISC	bulletin
ASH	38.0	58.4	1375.8	175.4						GS	bulletin
SHD	36.4	54.9	1383.9	176.2						ISC	bulletin
KIS	47.0	28.8	1455.6	184.5						GS	bulletin
KER	34.4	47.1	1499.3	195.0						ISC	bulletin
IAS	47.2	27.6	1545.4	194.0						ISC	bulletin
CFR	45.2	28.2	1555.8	196.0						ISC	bulletin
MAIO	36.3	59.5	1582.5	200.0						ISC	bulletin
MIK	54.5	27.8	1592.0	198.0						GS	bulletin
FOC	45.7	27.2	1611.6	207.0						ISC	bulletin
KLT	40.6	30.1	1640.7	206.7						ISC	bulletin
BRV	53.1	70.3	1664.6	208.1						GS	bulletin
ISR	45.1	26.5	1677.5		218.5					ISC	bulletin
ISK	41.1	29.1	1687.2	212.0						ISC	bulletin
VOST&	52.7	71.0	1704.9	212.1			376.4	396.8	482.4	CSE	record
CHKA&	53.7	70.7	1705.8	212.2			376.8	397.0	483.1	CSE	record
CTT	41.1	28.4	1726.8	216.0						ISC	bulletin
SAM	39.7	67.0	1758.0	220.4			398.0			GS	bulletin
PUL	59.8	30.3	1759.0	218.0						GS	bulletin
LVV	49.8	24.0	1773.9	220.5						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/24/79	05:59:59.0	47.850	48.140

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CMP	45.3	25.0	1785.7	219.0						ISC	bulletin
DST	39.6	28.6	1809.7	228.1						ISC	bulletin
EDC	40.3	27.9	1815.3	227.6						ISC	bulletin
TAS	41.3	69.3	1820.2	227.6						GS	bulletin
MFT	40.8	27.3	1829.8	229.0						ISC	bulletin
BMR	47.7	23.5	1837.9	229.0						ISC	bulletin
PVL	43.2	25.3	1844.6		233.0					ISC	bulletin
TGI	33.0	59.2	1893.5		238.5					ISC	bulletin
UZH	48.6	22.3	1910.8	238.0						GS	bulletin
DEV	45.9	22.9	1925.8	240.0						ISC	bulletin
ELL	36.7	29.9	1933.3		246.0					ISC	bulletin
DSH	38.6	68.8	1955.5		245.6					GS	bulletin
EZN	39.8	26.3	1956.1		245.2					ISC	bulletin
IZM	38.4	27.3	1985.0	248.6						ISC	bulletin
WAR	52.2	21.0	1988.2	247.0						ISC	bulletin
YER	37.1	28.3	2007.8		252.6					ISC	bulletin
SOF	42.7	23.3	2017.3		252.5					ISC	bulletin
AKJ&	41.6	72.3	2019.8	250.1						CSE	record
GAR	39.0	70.3	2034.5	254.0						GS	bulletin
JOS	48.5	20.5	2040.9	250.0						ISC	bulletin
NIE	49.4	20.3	2044.8	251.5						ISC	bulletin
SPC	49.2	20.2	2052.4	255.1						ISC	bulletin
SHI	29.6	52.5	2052.6		256.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/24/79	05:59:59.0	47.850	48.140

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KARK&	41.6	72.7	2053.6		256.3					CSE	record
NUR	60.5	24.7	2060.5	252.0						ISC	bulletin
KRA	50.1	19.9	2065.5	253.0						ISC	bulletin
KUL	37.9	69.8	2071.6		258.3					GS	bulletin
ANR	40.8	72.4	2074.8	257.9						GS	bulletin
FRU	42.8	74.6	2135.0		264.4					GS	bulletin
BEO	44.8	20.5	2143.8	264.0						ISC	bulletin
SKO	42.0	21.4	2192.1		271.3					ISC	bulletin
KJF	64.2	27.7	2198.7		268.0					ISC	bulletin
SRO	47.8	18.3	2216.9		275.0					ISC	bulletin
KHO	37.5	71.5	2220.8		274.0					GS	bulletin
ATH	38.0	23.7	2259.4		278.5					ISC	bulletin
KBL	34.5	69.0	2276.9		281.0					ISC	bulletin
PHP	41.7	20.4	2280.3		280.9					ISC	bulletin
ZST	48.2	17.1	2297.4		281.5					ISC	bulletin
NRN	41.4	76.0	2305.3		281.5					GS	bulletin
KBN	40.6	20.8	2310.3		283.5					ISC	bulletin
TLG&	43.2	77.2	2311.3		283.2					CSE	record
AAB	43.2	77.2	2312.0		283.0					GS	bulletin
KSP	50.8	16.3	2317.3		282.0					ISC	bulletin
EIL	29.5	35.0	2322.0		282.5					ISC	bulletin
SDA	42.1	19.5	2332.4		285.2					ISC	bulletin
SEM	50.4	80.3	2340.1		284.8					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/24/79	05:59:59.0	47.850	48.140

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TIR	41.3	19.9	2340.2		285.8					ISC	bulletin
APA	67.6	33.4	2347.8		284.3					GS	bulletin
SOP	47.7	16.6	2348.5		286.2					ISC	bulletin
VIE	48.2	16.4	2350.3		287.0					ISC	bulletin
VKA	48.3	16.3	2353.2		287.2					ISC	bulletin
UPP	59.9	17.6	2377.2		286.6					ISC	bulletin
BLY	44.7	17.2	2390.8		290.2					ISC	bulletin
SRN	39.9	20.0	2409.5		292.0					ISC	bulletin
VLO	40.5	19.5	2414.0		292.9					ISC	bulletin
PRZ	42.5	78.4	2432.9		296.0					GS	bulletin
ZAG	45.8	16.0	2442.1		295.9					ISC	bulletin
PRU	50.0	14.5	2450.7		296.2					ISC	bulletin
UME	63.8	20.2	2453.6		294.7					ISC	bulletin
PRA	50.1	14.4	2457.3		297.0					ISC	bulletin
BRG	50.9	13.9	2481.8		298.8					ISC	bulletin
SOD	67.4	26.6	2494.8		298.0					ISC	bulletin
MOA	47.8	14.3	2512.2		302.0					ISC	bulletin
KMR	48.1	14.1	2517.0		303.0					ISC	bulletin
BRN	52.4	13.2	2520.8		302.0					ISC	bulletin
LCI	40.3	18.1	2523.5		303.0					ISC	bulletin
KHC	49.1	13.6	2534.0		304.2					ISC	bulletin
NVS	54.9	83.3	2535.3		303.2					GS	bulletin
CLL	51.3	13.0	2542.8		304.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/24/79	05:59:59.0	47.850	48.140

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
LJU	46.0	14.5	2543.5		305.5					ISC	bulletin
CEY	45.7	14.4	2561.4		306.7					ISC	bulletin
BRT	40.9	17.2	2562.1		306.0					ISC	bulletin
COP	55.7	12.4	2578.5		307.5					ISC	bulletin
HFS	60.1	13.7	2594.9		308.5					ISC	bulletin
BHG	47.7	12.9	2616.5		311.8					ISC	bulletin
HOF	50.3	11.9	2634.3		312.8					ISC	bulletin
MOX	50.7	11.6	2647.4		314.5					ISC	bulletin
GRF	49.7	11.2	2691.6		319.4					ISC	bulletin
KEV	69.8	27.0	2694.3		317.1					ISC	bulletin
KIR	67.8	20.4	2717.7		319.3					ISC	bulletin
DUI	41.7	14.5	2727.3		321.5					ISC	bulletin
ELT	53.3	86.3	2731.9		319.9					GS	bulletin
SGG	41.4	14.4	2746.8		323.5					ISC	bulletin
GAP	47.5	11.1	2755.4		323.2					ISC	bulletin
NAO	60.8	10.8	2767.1		323.0					ISC	bulletin
OGA	46.9	11.0	2776.1		324.8					ISC	bulletin
DPS	40.6	14.4	2787.4		326.2					ISC	bulletin
KON	59.6	9.6	2805.5		326.3					ISC	bulletin
MNS	42.4	12.7	2825.9		328.6					ISC	bulletin
OII	38.2	15.7	2827.2		329.6					ISC	bulletin
MES	38.2	15.6	2834.3		330.7					ISC	bulletin
BSL	44.0	11.4	2849.4		331.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/24/79	05:59:59.0	47.850	48.140

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SAL	45.6	10.5	2854.5		331.0					ISC	bulletin
STU	48.8	9.2	2856.3		332.0					ISC	bulletin
LLI	38.4	14.9	2864.4		393.0					ISC	bulletin
VPL	38.4	15.0	2865.7		392.3					ISC	bulletin
NOV	38.0	15.1	2875.4		393.5					ISC	bulletin
TRO	69.6	18.9	2894.9		333.6					ISC	bulletin
ACL	38.5	14.4	2903.1		395.5					ISC	bulletin
BUB	47.7	8.6	2926.3		337.4					ISC	bulletin
ZUL	47.5	8.4	2949.5		339.0					ISC	bulletin
WIT	52.8	6.7	2958.5		340.6					ISC	bulletin
GIB	38.0	14.0	2959.5		340.0					ISC	bulletin
WTS	52.0	6.8	2959.8		340.6					ISC	bulletin
STR	48.6	7.8	2963.4		341.5					ISC	bulletin
WLS	48.4	7.4	2997.5		343.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/16/80	06:00:00	52.9 (?)	56.5 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	413.2	57.7			98.4		119.9	GS	record
SVE	56.827	60.637	511.0	72.4		85.0	126.0		146.0	GS	record
OBN	55.115	36.568	1324.2	164.8			294.0		379.0	GS	record
NVS	54.850	83.266	1761.7	231.0						GS	record
ELT	53.253	86.277	1980.2	252.0			445.0			GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/25/80	06:00:00	52.9 (?)	56.5 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	413.2	57.7			99.9		118.2	GS	record
SVE	56.827	60.637	511.0	72.5		84.0	125.5		146.0	GS	record
VOST&	52.720	70.970	973.6	134.6						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/08/80	06:00:00.29	46.757	48.275

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GRO	43.320	45.750	430.1	61.7						GS	bulletin
DBC	43.020	46.830	430.2	60.4		69.9	109.2		123.2	GS	record
BUY	42.810	47.130	447.3	64.2		71.7	114.7		131.7	GS	record
PYA	44.033	43.058	507.7	68.7						GS	bulletin
DRN	42.030	48.330	524.6	72.7		86.7	123.2		146.7	GS	record
AKT	41.480	47.730	587.2	81.2		96.7	144.7			GS	record
BKR	41.733	43.517	674.2	90.6						GS	bulletin
KRV	40.647	46.319	696.0	93.7						GS	bulletin
GRS	39.500	46.330	820.4	108.1						GS	bulletin
KAT	39.028	56.270	1076.1	140.7						GS	bulletin
SIM	44.949	34.116	1115.0	142.7						GS	bulletin
OBN	55.115	36.568	1237.4	158.1			278.7			GS	bulletin
OBN	55.115	36.568	1237.4	158.1		197.9	276.2		349.7	GS	record
VAN	37.948	58.108	1266.6	158.7						GS	bulletin
SHD	36.433	54.942	1271.3	162.7						ISC	bulletin
ASH	37.950	58.350	1279.1	158.7						GS	bulletin
ARU	56.416	58.570	1285.9	160.8		196.5	286.3		347.5	GS	record
ARU	56.416	58.570	1285.9	161.2						GS	bulletin
SVE	56.827	60.637	1402.5	174.7						GS	bulletin
SVE	56.827	60.637	1402.5	176.9			306.7			GS	record
MAIO	36.308	59.472	1484.7	188.0						ISC	bulletin
IAS	47.193	27.562	1570.6	196.7			349.7			ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/08/80	06:00:00.29	46.757	48.275

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KHI	34.143	58.642	1648.2	209.9						ISC	bulletin
VRI	45.870	26.725	1655.8	208.7				383.7		ISC	bulletin
ISK	41.066	29.059	1660.5	213.7						ISC	bulletin
BRV&	53.005	70.050	1702.1	213.5			376.1	393.7	478.2	CSE	record
BRV	53.083	70.250	1717.3	213.4						GS	bulletin
MLR	45.492	25.944	1724.0	215.7			385.7			ISC	bulletin
VOST&	52.720	70.970	1754.3	217.7	228.9		381.5	397.5	483.0	CSE	record
TAS	41.340	69.310	1781.2	222.7						GS	bulletin
EDC	40.347	27.863	1787.6		228.7					ISC	bulletin
CMP	45.268	25.038	1798.6		234.7					ISC	bulletin
MDB	46.142	24.381	1828.1		235.7					ISC	bulletin
PVL	43.217	25.333	1842.4	231.7						ISC	bulletin
PUL	59.773	30.324	1865.7		236.7			419.7		GS	bulletin
DRA	44.679	24.256	1874.7		239.7					ISC	bulletin
DSH	38.570	68.760	1899.3		242.8					GS	bulletin
KDZ	41.650	25.417	1903.0		238.7					ISC	bulletin
EZN	39.826	26.325	1929.8		243.1					ISC	bulletin
SHI	29.644	52.526	1931.8	241.7						ISC	bulletin
CIN	37.600	28.087	1942.4		245.7					ISC	bulletin
UZH	48.631	22.293	1949.9	244.7						GS	bulletin
YER	37.135	28.283	1961.0		249.2					ISC	bulletin
GZR	45.393	22.777	1967.5		246.7					ISC	bulletin
AKJ&	41.607	72.253	1989.5	246.9						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/08/80	06:00:00.29	46.757	48.275

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KUL	37.900	69.780	2015.0	252.5						GS	bulletin
KARK&	41.630	72.730	2024.5	252.2						CSE	record
ANR	40.750	72.370	2039.9	251.9				463.7		GS	bulletin
SSR	44.863	21.743	2060.8		257.7					ISC	bulletin
JOS	48.496	20.539	2080.0	256.7						ISC	bulletin
NIE	49.419	20.313	2089.7	258.2						ISC	bulletin
SPC	49.189	20.245	2095.9	259.8						ISC	bulletin
KRA	50.058	19.940	2114.4	259.3						ISC	bulletin
FRU	42.830	74.620	2116.8	261.7						GS	bulletin
NUR	60.509	24.651	2163.1	263.4						ISC	bulletin
SKO	41.972	21.439	2189.9		271.5					ISC	bulletin
BUD	47.484	19.024	2205.8		271.7					ISC	bulletin
EIL	29.550	34.950	2228.1		277.2					ISC	bulletin
OHR	41.111	20.799	2277.7		278.7					ISC	bulletin
TLG&	43.238	77.225	2299.8		282.0					CSE	record
AAB	43.230	77.230	2300.5		281.7					GS	bulletin
KJF	64.199	27.715	2312.1		280.7					ISC	bulletin
TIR	41.348	19.865	2337.7		285.3					ISC	bulletin
SOP	47.683	16.558	2385.3		289.5					ISC	bulletin
VKA	48.265	16.318	2393.2		290.5					ISC	bulletin
PRZ	42.480	78.400	2419.3		294.3					GS	bulletin
APA	67.558	33.442	2467.5		296.5					GS	bulletin
UPP	59.858	17.627	2472.1		295.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/08/80	06:00:00.29	46.757	48.275

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRG	50.873	13.943	2536.4		303.1					ISC	bulletin
MOA	47.849	14.266	2551.4		304.7					ISC	bulletin
UME	63.815	20.237	2561.1		304.0					ISC	bulletin
KHC	49.131	13.578	2580.1		307.7					ISC	bulletin
CLL	51.308	13.002	2599.7		308.7					ISC	bulletin
SOD	67.371	26.629	2611.5		309.3					ISC	bulletin
WET	49.144	12.878	2630.5		313.5					ISC	bulletin
HFS	60.134	13.696	2688.4		316.1					ISC	bulletin
MOX	50.665	11.616	2701.7		318.2					ISC	bulletin
DUI	41.658	14.461	2735.8		322.2					ISC	bulletin
GRF	49.692	11.222	2741.5		322.7					ISC	bulletin
GRFO	49.691	11.220	2741.6		322.6					ISC	bulletin
SGG	41.387	14.379	2754.2		323.2					ISC	bulletin
ELT	53.253	86.277	2780.0		324.7					GS	bulletin
AQU	42.354	13.403	2786.6		323.9					ISC	bulletin
CTI	46.048	11.650	2789.0		324.7					ISC	bulletin
OGA	46.868	11.025	2813.0		326.8					ISC	bulletin
KEV	69.755	27.007	2813.1		326.4					ISC	bulletin
KIR	67.840	20.417	2832.2		327.8					ISC	bulletin
MNS	42.385	12.680	2840.5		329.2					ISC	bulletin
NAO	60.824	10.832	2861.5		329.7					ISC	bulletin
SAL	45.607	10.526	2886.2		333.2					ISC	bulletin
BUB	47.749	8.603	2969.0		339.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/08/80	06:00:00.29	46.757	48.275

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZUL	47.481	8.390	2991.3		341.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/25/81	05:00:00.32	68.20	53.50

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
APA	67.558	33.442	842.5	109.7			195.7			GS	bulletin
SOD	67.371	26.629	1128.9	144.0			258.7			ISC	bulletin
KJF	64.199	27.715	1233.0	157.2			280.7			ISC	bulletin
SVE	56.827	60.637	1317.4	166.5			294.7	315.7	357.7	GS	record
SVE	56.827	60.637	1317.4	165.8						GS	bulletin
ARU	56.416	58.570	1338.0	167.7			295.7		362.7	GS	record
ARU	56.416	58.570	1338.0	168.2						GS	bulletin
KIR	67.840	20.417	1366.5	171.6						ISC	bulletin
NRI	69.430	88.083	1383.3	175.3				323.7		GS	bulletin
NRI	69.430	88.083	1383.3	175.7			301.7		394.2	GS	record
SUF	62.719	26.151	1391.8	175.6						ISC	bulletin
PUL	59.773	30.324	1457.3	182.7				337.7		GS	bulletin
PUL	59.773	30.324	1457.3	182.7			323.7		413.7	GS	record
UME	63.815	20.237	1564.5	194.3						ISC	bulletin
MOS	55.738	37.625	1608.0	199.7						GS	bulletin
NUR	60.509	24.651	1613.5	201.7			347.7			ISC	bulletin
OBN	55.115	36.568	1698.7	211.7						GS	bulletin
OBN	55.115	36.568	1698.7	212.2			369.7		482.7	GS	record
KBS	78.918	11.924	1708.0	210.9			371.7			ISC	bulletin
UPP	59.858	17.627	1945.5	239.9						ISC	bulletin
MIK	54.500	27.833	2022.8	247.7						GS	bulletin
APP	60.539	13.928	2046.3	252.1						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/25/81	05:00:00.32	68.20	53.50

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
HFS	60.134	13.696	2085.9	257.0						ISC	bulletin
TBY	60.079	12.830	2125.7	261.9						ISC	bulletin
NVS	54.850	83.266	2133.1	263.5						GS	bulletin
KON	59.649	9.598	2291.7	279.5						ISC	bulletin
ELT	53.253	86.277	2390.3		287.4					GS	bulletin
DAG	76.771	-18.655	2410.2		290.1					ISC	bulletin
SEM	50.400	80.250	2457.9		294.4					GS	bulletin
WAR	52.242	21.024	2474.1		297.7					ISC	bulletin
COP	55.683	12.433	2495.5		299.2					ISC	bulletin
LVV	49.819	24.031	2603.7		310.7					GS	bulletin
KRA	50.058	19.940	2721.3		319.5					ISC	bulletin
TIK	71.630	128.870	2724.0		319.2					GS	bulletin
KIS	46.998	28.818	2740.6		321.7					GS	bulletin
BRL	52.472	13.291	2744.8		323.2					ISC	bulletin
IAS	47.193	27.562	2756.9		322.7					ISC	bulletin
PYA	44.033	43.058	2757.5		322.7					GS	bulletin
NIE	49.419	20.313	2769.9		325.2					ISC	bulletin
UZH	48.631	22.293	2779.0		324.2					GS	bulletin
KSP	50.843	16.293	2780.0		324.7					ISC	bulletin
SPC	49.189	20.245	2794.7		326.7					ISC	bulletin
SIM	44.949	34.116	2819.4		327.7					GS	bulletin
DBC	43.020	46.830	2829.1		328.7					GS	record
MAK	42.961	47.505	2830.3		329.7					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/25/81	05:00:00.32	68.20	53.50

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BMR	47.673	23.497	2834.5		329.7					ISC	bulletin
BAC	46.567	26.900	2840.6		328.7					ISC	bulletin
UER	51.563	94.087	2842.5		329.2					GS	bulletin
BUY	42.810	47.130	2849.9		331.2					GS	record
JOS	48.496	20.539	2852.2		330.9					ISC	bulletin
SOC	43.583	39.720	2855.8		331.7					GS	bulletin
CLL	51.308	13.002	2862.6		331.4					ISC	bulletin
BRG	50.873	13.943	2866.5		331.9					ISC	bulletin
ALE	82.503	-62.350	2894.7		333.9					ISC	bulletin
VRI	45.870	26.725	2917.2		335.7					ISC	bulletin
ODB	45.775	27.056	2917.3		398.7					ISC	bulletin
PRA	50.070	14.433	2923.0		336.7					ISC	bulletin
PRU	49.988	14.542	2926.6		337.2					ISC	bulletin
CJR	46.713	23.598	2927.6		337.8					ISC	bulletin
PSZ	47.919	19.894	2931.2		337.7					ISC	bulletin
CFR	45.185	28.153	2946.7		338.2					ISC	bulletin
AKU	65.687	-18.107	2966.5		341.1					ISC	bulletin
MOX	50.665	11.616	2976.0		340.7					ISC	bulletin
WIT	52.813	6.670	2978.8		341.9					ISC	bulletin
MLR	45.492	25.944	2979.2		342.7					ISC	bulletin
AKT	41.480	47.730	2992.4		342.2					GS	record
SRO	47.813	18.313	2997.1		343.7					ISC	bulletin
ISR	45.138	26.545	2997.8		343.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
05/25/81	05:00:00.32	68.20	53.50

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
HOF	50.314	11.877	2998.4		342.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/02/81	03:59:59.99	60.60 (?)	55.70 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	494.8	61.8			107.8		121.8	GS	record
SVE	56.827	60.637	507.9	61.0		71.0	118.0			GS	record
OBN	55.115	36.568	1282.5	171.0					365.0	GS	record
KJF	64.199	27.715	1487.8	199.0			335.0			ISC	bulletin
SUF	62.719	26.151	1568.6	206.6						ISC	bulletin
SOD	67.371	26.629	1590.0	209.0						ISC	bulletin
KEV	69.755	27.007	1661.7	216.7			379.0			ISC	bulletin
NUR	60.509	24.651	1687.1	219.0			390.0			ISC	bulletin
NVS	54.850	83.266	1746.1	217.0			380.5			GS	record
UME	63.815	20.237	1854.1	240.7						ISC	bulletin
KIR	67.840	20.417	1859.2	242.2						ISC	bulletin
TRO	69.632	18.928	1955.1	252.4						ISC	bulletin
ELT	53.253	86.277	2009.0	240.0			447.0			GS	record
UPP	59.858	17.627	2081.2	266.8						ISC	bulletin
APP	60.539	13.928	2251.4	283.8						ISC	bulletin
HFS	60.134	13.696	2278.2	286.0						ISC	bulletin
SLL	60.476	13.320	2285.2		287.3					ISC	bulletin
TBY	60.079	12.830	2325.6		290.6					ISC	bulletin
NB2	61.040	11.215	2373.7		296.0					ISC	bulletin
KRA	50.058	19.940	2510.7		306.0					ISC	bulletin
KON	59.649	9.598	2511.6		308.0					ISC	bulletin
UER	51.563	94.087	2545.8		295.5					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/02/81	03:59:59.99	60.60 (?)	55.70 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
JOS	48.496	20.539	2596.9		316.0					ISC	bulletin
KSP	50.843	16.293	2651.4		321.0					ISC	bulletin
BRG	50.873	13.943	2777.5		332.0					ISC	bulletin
CLL	51.308	13.002	2798.8		332.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:00:00.28	46.790	48.313

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MAK	42.961	47.505	429.7	62.4			108.7			GS	bulletin
DLM	43.070	46.630	433.7	62.1			111.5			GS	record
BUY	42.810	47.130	451.5	65.2						GS	record
PYA	44.033	43.058	512.2	69.7						GS	bulletin
DRN	42.030	48.330	528.3	73.2			133.7		146.7	GS	record
UCH&	43.850	42.550	556.7	75.8		95.0	135.5		155.6	CSE	record
AKT	41.480	47.730	591.1	82.2		101.7	145.2			GS	record
BKR	41.733	43.517	678.9	90.7						GS	bulletin
SHE	40.646	48.642	682.3	93.2						GS	bulletin
KRV	40.647	46.319	700.2	93.7						GS	bulletin
SOC	43.583	39.720	762.1	101.7						GS	bulletin
GRS	39.500	46.330	824.6	109.5						GS	bulletin
ANN	44.800	37.433	872.5	114.7						GS	bulletin
TAB	38.068	46.327	981.2	131.7						ISC	bulletin
SIM	44.949	34.116	1118.3	145.7						GS	bulletin
KVT	41.081	36.046	1168.0	151.4						ISC	bulletin
OBN	55.115	36.568	1236.2	157.1		196.7	280.7		352.7	GS	record
OBN	55.115	36.568	1236.2	157.5						GS	bulletin
MOS	55.738	37.625	1240.0	157.7						GS	bulletin
TEH	35.738	51.386	1252.1	162.7						ISC	bulletin
ASH	37.950	58.350	1279.7	165.2						GS	bulletin
ARU	56.416	58.570	1281.3	161.2						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:00:00.28	46.790	48.313

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	1281.3	161.8			285.3		348.3	GS	record
KAS	41.372	33.767	1307.0	167.7						ISC	bulletin
SVE	56.827	60.637	1397.8	175.7						GS	bulletin
SVE	56.827	60.637	1397.8	176.2			307.7			GS	record
ZEL&	50.740	28.198	1535.6	190.8			338.9	364.9	427.6	CSE	record
KB&	50.425	27.850	1555.2	193.7			340.0	360.3		CSE	record
IAS	47.193	27.562	1572.8	204.7						ISC	bulletin
POD&	50.928	27.675	1575.2	196.1			348.0	363.5	440.3	CSE	record
ODB	45.775	27.056	1635.3	211.7						ISC	bulletin
VRI	45.870	26.725	1658.4	208.7						ISC	bulletin
CTT	41.147	28.430	1706.4	211.7						ISC	bulletin
ALT	39.055	30.110	1708.4	222.0						ISC	bulletin
BKT	40.142	29.136	1710.4	216.8						ISC	bulletin
DMK	41.822	27.757	1722.6	215.5						ISC	bulletin
MLR	45.492	25.944	1726.6	217.7						ISC	bulletin
TAS	41.340	69.310	1779.1	223.3						GS	bulletin
EDC	40.347	27.863	1791.4	230.9						ISC	bulletin
PVL	43.217	25.333	1845.5	232.7						ISC	bulletin
CJR	46.713	23.598	1878.6	235.7						ISC	bulletin
DIM	42.050	25.533	1879.2	238.7						ISC	bulletin
ELL	36.748	29.908	1883.3	241.6						ISC	bulletin
DSH	38.570	68.760	1897.9	238.9						GS	bulletin
KDZ	41.650	25.417	1906.4		237.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:00:00.28	46.790	48.313

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UZH	48.631	22.293	1951.7		242.2					GS	bulletin
GZR	45.393	22.777	1970.1		244.7					ISC	bulletin
AKJ&	41.607	72.253	1987.2	249.6	257.5			457.8	564.0	CSE	record
KUL	37.900	69.780	2013.6		252.9					GS	bulletin
KARK&	41.630	72.730	2022.1		252.1					CSE	record
ANR	40.750	72.370	2037.7		253.5					GS	bulletin
JOS	48.496	20.539	2081.8		256.7					ISC	bulletin
SPC	49.189	20.245	2097.6		261.0					ISC	bulletin
FRU	42.830	74.620	2114.0		262.1					GS	bulletin
KRA	50.058	19.940	2115.9		258.7					ISC	bulletin
PSZ	47.919	19.894	2136.4		263.5					ISC	bulletin
NUR	60.509	24.651	2161.9		263.0					ISC	bulletin
KHO	37.480	71.530	2165.7		269.5					GS	bulletin
SUF	62.719	26.151	2250.5		275.1					ISC	bulletin
SRO	47.813	18.313	2255.1		279.7					ISC	bulletin
TLG&	43.238	77.225	2296.8		282.0					CSE	record
KJF	64.199	27.715	2310.1		280.2					ISC	bulletin
TIR	41.348	19.865	2340.8		286.0					ISC	bulletin
SEM	50.400	80.250	2368.5		287.2					GS	bulletin
KSP	50.843	16.293	2372.6		286.7					ISC	bulletin
PRZ	42.480	78.400	2416.4		293.0					GS	bulletin
QUE	30.188	66.950	2441.0		295.9					ISC	bulletin
APA	67.558	33.442	2464.7		295.5					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:00:00.28	46.790	48.313

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UPP	59.858	17.627	2471.3		295.5					ISC	bulletin
PRU	49.988	14.542	2502.1		299.7					ISC	bulletin
PRA	50.070	14.433	2509.1		300.7					ISC	bulletin
BRG	50.873	13.943	2537.6		303.1					ISC	bulletin
UME	63.815	20.237	2559.6		303.9					ISC	bulletin
LJU	46.043	14.533	2575.5		308.1					ISC	bulletin
KHC	49.131	13.578	2581.7		307.8					ISC	bulletin
CLL	51.308	13.002	2600.8		308.2					ISC	bulletin
SOD	67.371	26.629	2609.1		309.0					ISC	bulletin
WET	49.144	12.878	2632.0		313.5					ISC	bulletin
TRI	45.709	13.764	2642.6		313.3					ISC	bulletin
COP	55.683	12.433	2655.3		314.7					ISC	bulletin
USK	50.937	84.773	2683.7		316.7					GS	bulletin
HOF	50.314	11.877	2688.2		316.8					ISC	bulletin
MOX	50.665	11.616	2702.9		318.2					ISC	bulletin
SGO	40.558	15.308	2724.9		321.7					ISC	bulletin
DUI	41.658	14.461	2738.6		321.2					ISC	bulletin
GRF	49.692	11.222	2742.9		322.9					ISC	bulletin
ALP	42.780	13.576	2758.6		323.0					ISC	bulletin
FUR	48.163	11.275	2766.1		324.0					ISC	bulletin
AQU	42.354	13.403	2789.4		325.7					ISC	bulletin
KEV	69.755	27.007	2810.5		326.6					ISC	bulletin
OGA	46.868	11.025	2815.0		326.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:00:00.28	46.790	48.313

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KIR	67.840	20.417	2830.1		327.5					ISC	bulletin
MNS	42.385	12.680	2843.1		329.7					ISC	bulletin
NAO	60.824	10.832	2860.8		329.9					ISC	bulletin
KON	59.649	9.598	2895.3		332.6					ISC	bulletin
LLS	46.849	9.009	2964.5		338.2					ISC	bulletin
BUH	48.676	8.228	2976.4		341.4					ISC	bulletin
ZUL	47.481	8.390	2993.0		341.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:03:59.94	46.771	48.304

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	431.5	60.6			109.1			GS	record
BUY	42.810	47.130	449.3	65.1			115.6			GS	record
DRN	42.030	48.330	526.2	73.1		86.1	131.6		151.1	GS	record
UCH&	43.850	42.550	555.0	76.0		95.9	135.7		155.5	CSE	record
AKT	41.480	47.730	589.0	81.8		101.6				GS	record
BKR	41.733	43.517	676.8	91.1						GS	bulletin
KRV	40.647	46.319	698.0	94.1						GS	bulletin
SOC	43.583	39.720	760.6	102.1						GS	bulletin
GRS	39.500	46.330	822.4	109.7						GS	bulletin
ANN	44.800	37.433	871.5	114.6			207.1			GS	bulletin
KVT	41.081	36.046	1166.4	151.5						ISC	bulletin
OBN	55.115	36.568	1237.5	157.6		196.8	281.1		353.1	GS	record
TEH	35.738	51.386	1250.2	163.1						ISC	bulletin
ARU	56.416	58.570	1283.4	161.7			286.2			GS	record
KAS	41.372	33.767	1305.6	171.1						ISC	bulletin
SVE	56.827	60.637	1400.0	176.6			306.1		386.1	GS	record
ZEL&	50.740	28.198	1535.9	191.0			338.7	352.5	430.0	CSE	record
KB&	50.425	27.850	1555.4	195.8			345.8	361.3	438.5	CSE	record
POD&	50.928	27.675	1575.5	196.6			349.2	367.5	440.3	CSE	record
TLB	44.589	28.033	1591.4	201.1						ISC	bulletin
HRT	40.822	29.668	1631.8	208.1						ISC	bulletin
VRI	45.870	26.725	1657.9	209.1						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:03:59.94	46.771	48.304

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ISR	45.138	26.545	1689.3	215.1						ISC	bulletin
SAM	39.660	66.950	1700.5	219.1						GS	bulletin
CTT	41.147	28.430	1705.2	213.1						ISC	bulletin
ALT	39.055	30.110	1706.9	219.1						ISC	bulletin
BKT	40.142	29.136	1709.1	217.1						ISC	bulletin
DMK	41.822	27.757	1721.5	213.0						ISC	bulletin
MLR	45.492	25.944	1726.1	213.4						ISC	bulletin
TAS	41.340	69.310	1779.4	225.2						GS	bulletin
EDC	40.347	27.863	1790.1	229.3						ISC	bulletin
MDB	46.142	24.381	1830.2	231.1						ISC	bulletin
DIM	42.050	25.533	1878.2	239.1						ISC	bulletin
DSH	38.570	68.760	1897.8		242.5					GS	bulletin
KDZ	41.650	25.417	1905.4	238.1						ISC	bulletin
EZN	39.826	26.325	1932.3		244.1					ISC	bulletin
YER	37.135	28.283	1963.6		247.1					ISC	bulletin
GZR	45.393	22.777	1969.5	244.1						ISC	bulletin
AKJ&	41.607	72.253	1987.5		249.8			458.1	564.2	CSE	record
KUL	37.900	69.780	2013.5	251.3						GS	bulletin
KARK&	41.630	72.730	2022.5		254.5					CSE	record
SSR	44.863	21.743	2062.9		257.1					ISC	bulletin
JOS	48.496	20.539	2081.7	257.1						ISC	bulletin
KRA	50.058	19.940	2115.9	259.6						ISC	bulletin
PSZ	47.919	19.894	2136.2	263.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:03:59.94	46.771	48.304

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NUR	60.509	24.651	2163.2	262.0						ISC	bulletin
SUF	62.719	26.151	2252.0		276.1					ISC	bulletin
NRN	41.430	76.000	2279.7		280.0					GS	bulletin
TLG&	43.238	77.225	2297.6		282.1					CSE	record
KJF	64.199	27.715	2311.7		280.1					ISC	bulletin
TIR	41.348	19.865	2340.0		285.9					ISC	bulletin
SEM	50.400	80.250	2370.0		287.3					GS	bulletin
KSP	50.843	16.293	2372.7		286.6					ISC	bulletin
PRZ	42.480	78.400	2417.1		293.4					GS	bulletin
QUE	30.188	66.950	2440.1		296.3					ISC	bulletin
APA	67.558	33.442	2466.6		295.6					GS	bulletin
UPP	59.858	17.627	2472.4		295.9					ISC	bulletin
PRU	49.988	14.542	2502.2		300.1					ISC	bulletin
PRA	50.070	14.433	2509.2		300.1					ISC	bulletin
BRG	50.873	13.943	2537.8		303.4					ISC	bulletin
UME	63.815	20.237	2561.0		305.3					ISC	bulletin
KHC	49.131	13.578	2581.7		307.9					ISC	bulletin
CLL	51.308	13.002	2601.1		308.6					ISC	bulletin
SOD	67.371	26.629	2610.9		309.1					ISC	bulletin
WET	49.144	12.878	2632.1		313.9					ISC	bulletin
TRI	45.709	13.764	2642.3		313.1					ISC	bulletin
COP	55.683	12.433	2656.0		315.1					ISC	bulletin
HOF	50.314	11.877	2688.3		316.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/26/81	05:03:59.94	46.771	48.304

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MOX	50.665	11.616	2703.1		318.5					ISC	bulletin
SGO	40.558	15.308	2724.1		320.6					ISC	bulletin
DUI	41.658	14.461	2738.0		321.6					ISC	bulletin
GRF	49.692	11.222	2743.0		323.1					ISC	bulletin
ALP	42.780	13.576	2758.1		323.0					ISC	bulletin
FUR	48.163	11.275	2766.1		323.9					ISC	bulletin
ELT	53.253	86.277	2777.3		323.5					GS	bulletin
AQU	42.354	13.403	2788.8		325.6					ISC	bulletin
KEV	69.755	27.007	2812.3		327.0					ISC	bulletin
KIR	67.840	20.417	2831.7		327.5					ISC	bulletin
MNS	42.385	12.680	2842.6		328.1					ISC	bulletin
NAO	60.824	10.832	2861.8		330.3					ISC	bulletin
LLS	46.849	9.009	2964.4		338.6					ISC	bulletin
ZUL	47.481	8.390	2993.0		341.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:00:00.15	46.759	48.247

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	428.8	61.8			109.8		123.8	GS	record
DBC	43.020	46.830	429.8	60.8						GS	record
BUY	42.810	47.130	447.1	63.8						GS	record
PYA	44.033	43.058	506.1	68.3						GS	bulletin
DRN	42.030	48.330	524.9	73.3						GS	record
UCH&	43.850	42.550	550.6	74.9		91.1	135.5		155.5	CSE	record
BKR	41.733	43.517	673.1	91.3						GS	bulletin
KRV	40.647	46.319	695.7	92.8						GS	bulletin
SOC	43.583	39.720	756.1	101.3						GS	bulletin
ANN	44.800	37.433	867.0	113.8						GS	bulletin
TAB	38.068	46.327	976.9	131.8						ISC	bulletin
OBN	55.115	36.568	1235.9	158.2		198.3	273.8		353.8	GS	record
OBN	55.115	36.568	1235.9	158.7						GS	bulletin
MOS	55.738	37.625	1240.2	158.8						GS	bulletin
IR2	35.663	50.898	1250.2	161.7						ISC	bulletin
SEVR&	55.200	60.150	1252.7	159.1			280.0		362.0	CSE	record
VAN	37.948	58.108	1268.2	161.5						GS	bulletin
ASH	37.950	58.350	1280.7	164.8						GS	bulletin
ARU	56.416	58.570	1286.7	162.1						GS	bulletin
ARU	56.416	58.570	1286.7	162.2		205.2				GS	record
SVE	56.827	60.637	1403.4	176.4			305.8	331.8		GS	record
SVE	56.827	60.637	1403.4	177.0						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:00:00.15	46.759	48.247

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MHI	36.308	59.472	1486.3	189.7						ISC	bulletin
ZEL&	50.740	28.198	1532.4	189.8			340.4		432.6	CSE	record
KB&	50.425	27.850	1551.9	195.5			345.1		434.5	CSE	record
CFR	45.185	28.153	1561.0	196.8						ISC	bulletin
POD&	50.928	27.675	1572.1	195.5			340.8		429.7	CSE	record
PPE	46.217	27.617	1578.9	200.9						ISC	bulletin
TLB	44.589	28.033	1587.0	199.8						ISC	bulletin
CLI	46.550	27.283	1598.4	200.8						ISC	bulletin
ODB	45.775	27.056	1630.5	215.8						ISC	bulletin
KHI	34.143	58.642	1649.6	210.3						ISC	bulletin
VRI	45.870	26.725	1653.6	207.8						ISC	bulletin
ISR	45.138	26.545	1685.0	213.8						ISC	bulletin
SAM	39.660	66.950	1704.1	214.8						GS	bulletin
MLR	45.492	25.944	1721.8	216.3						ISC	bulletin
TAS	41.340	69.310	1783.3	223.0						GS	bulletin
EDC	40.347	27.863	1785.6		228.8					ISC	bulletin
MSR	46.038	24.821	1794.7	223.8						ISC	bulletin
CMP	45.268	25.038	1796.4		231.8					ISC	bulletin
PVL	43.217	25.333	1840.2	231.8						ISC	bulletin
PUL	59.773	30.324	1864.4	231.8						GS	bulletin
BMR	47.673	23.497	1867.6		239.8					ISC	bulletin
DRA	44.679	24.256	1872.5		239.8					ISC	bulletin
DIM	42.050	25.533	1873.7		240.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:00:00.15	46.759	48.247

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CJR	46.713	23.598	1874.2		237.8					ISC	bulletin
KDZ	41.650	25.417	1900.9		242.8					ISC	bulletin
DSH	38.570	68.760	1901.4	239.0						GS	bulletin
DEV	45.883	22.903	1943.7		247.8					ISC	bulletin
GZR	45.393	22.777	1965.3		246.8					ISC	bulletin
CLO	45.074	22.802	1972.0		249.8					ISC	bulletin
KUL	37.900	69.780	2017.1		252.6					GS	bulletin
VTS	42.592	23.208	2026.9		253.8					ISC	bulletin
ANR	40.750	72.370	2042.0		254.6					GS	bulletin
SSA	44.863	21.743	2058.6		255.8					ISC	bulletin
JOS	48.496	20.539	2077.9		256.8					ISC	bulletin
NIE	49.419	20.313	2087.6		257.8					ISC	bulletin
SPC	49.189	20.245	2093.8		258.9					ISC	bulletin
KRA	50.058	19.940	2112.3		259.4					ISC	bulletin
FRU	42.830	74.620	2118.9		262.6					GS	bulletin
VAY	41.321	22.570	2131.4		264.8					ISC	bulletin
PSZ	47.919	19.894	2132.3		262.7					ISC	bulletin
NUR	60.509	24.651	2161.7	262.8			479.8			ISC	bulletin
KHO	37.480	71.530	2169.3		270.0					GS	bulletin
SKO	41.972	21.439	2187.8		270.8					ISC	bulletin
KBL	34.541	69.043	2206.4		273.3					ISC	bulletin
SUF	62.719	26.151	2251.0		275.3					ISC	bulletin
NRN	41.430	76.000	2283.9		279.0					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:00:00.15	46.759	48.247

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TLG&	43.238	77.225	2301.9		282.0					CSE	record
AAB	43.230	77.230	2302.6		282.0					GS	bulletin
KJF	64.199	27.715	2311.0	280.0			497.8			ISC	bulletin
TIR	41.348	19.865	2335.6		285.7					ISC	bulletin
KSP	50.843	16.293	2369.2		287.1					ISC	bulletin
KSH	39.517	75.923	2373.2		287.8					ISC	bulletin
SOP	47.683	16.558	2383.1		284.6					ISC	bulletin
VKA	48.265	16.318	2391.1		289.8					ISC	bulletin
PRZ	42.480	78.400	2421.4		294.8					GS	bulletin
UPP	59.858	17.627	2470.4		295.5					ISC	bulletin
PRU	49.988	14.542	2498.6		299.8					ISC	bulletin
LCI	40.334	18.112	2517.2		302.8					ISC	bulletin
BRG	50.873	13.943	2534.3		302.7					ISC	bulletin
UME	63.815	20.237	2559.8		304.8					ISC	bulletin
KHC	49.131	13.578	2578.0		307.3					ISC	bulletin
NVS	54.850	83.266	2592.9		309.0					GS	bulletin
CLL	51.308	13.002	2597.7		308.2					ISC	bulletin
SOD	67.371	26.629	2610.6		308.7					ISC	bulletin
WET	49.144	12.878	2628.4		312.7					ISC	bulletin
KBA	47.078	13.345	2633.8		312.3					ISC	bulletin
TRI	45.709	13.764	2638.2		312.7					ISC	bulletin
COP	55.683	12.433	2653.2		314.5					ISC	bulletin
BHG	47.721	12.879	2654.0		314.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:00:00.15	46.759	48.247

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
HFS	60.134	13.696	2686.8		316.0					ISC	bulletin
APP	60.539	13.928	2689.0		316.0					ISC	bulletin
MOX	50.665	11.616	2699.6		318.1					ISC	bulletin
SLL	60.476	13.320	2718.4		318.6					ISC	bulletin
TBY	60.079	12.830	2730.9		319.2					ISC	bulletin
DUI	41.658	14.461	2733.6		322.3					ISC	bulletin
GRF	49.692	11.222	2739.4		322.7					ISC	bulletin
FUR	48.163	11.275	2762.3		323.4					ISC	bulletin
ELT	53.253	86.277	2781.7		324.3					GS	bulletin
AQU	42.354	13.403	2784.5		325.3					ISC	bulletin
CTI	46.048	11.650	2786.8		324.8					ISC	bulletin
OGA	46.868	11.025	2810.9		326.7					ISC	bulletin
KIR	67.840	20.417	2831.1		327.8					ISC	bulletin
MNS	42.385	12.680	2838.3		329.1					ISC	bulletin
NB2	61.040	11.215	2846.8		327.8					ISC	bulletin
MUD	56.460	9.170	2864.3		332.1					ISC	bulletin
KON	59.649	9.598	2894.0		334.2					ISC	bulletin
LLS	46.849	9.009	2960.5		338.6					ISC	bulletin
SLE	47.766	8.493	2974.5		340.3					ISC	bulletin
ZUL	47.481	8.390	2989.2		341.2					ISC	bulletin
TMA	46.106	8.873	2992.0		340.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:05:00.08	46.752	48.258

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	428.4	61.9		69.4	110.4		124.9	GS	record
DBC	43.020	46.830	429.3	62.4		71.4	109.4		126.9	GS	record
BUY	42.810	47.130	446.5	64.4		74.9	114.9		128.9	GS	record
PYA	44.033	43.058	506.3	68.4						GS	bulletin
DRN	42.030	48.330	524.1	73.4		86.6	133.9			GS	record
UCH&	43.850	42.550	550.9	75.0		91.4	135.2		155.4	CSE	record
BKR	41.733	43.517	673.0	90.4						GS	bulletin
KRV	40.647	46.319	695.1	92.9						GS	bulletin
SOC	43.583	39.720	756.5	101.4						GS	bulletin
GRS	39.500	46.330	819.6	108.3						GS	bulletin
ANN	44.800	37.433	867.6	114.4						GS	bulletin
OBN	55.115	36.568	1237.0	158.5		200.9	277.9		354.9	GS	record
OBN	55.115	36.568	1237.0	158.9						GS	bulletin
IR2	35.663	50.898	1249.3	161.3						ISC	bulletin
SEVR&	55.200	60.150	1252.9	159.3			281.7		361.8	CSE	record
ARU	56.416	58.570	1287.0	162.3						GS	record
ARU	56.416	58.570	1287.0	162.4						GS	bulletin
SVE	56.827	60.637	1403.7	176.4			307.9	332.9		GS	record
SVE	56.827	60.637	1403.7	176.6						GS	bulletin
ZEL&	50.740	28.198	1533.5	190.3			338.7		429.7	CSE	record
KB&	50.425	27.850	1552.9	194.0						CSE	record
CFR	45.185	28.153	1561.9	196.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:05:00.08	46.752	48.258

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
POD&	50.928	27.675	1573.2	196.0			345.3		430.6	CSE	record
PPE	46.217	27.617	1579.8	200.9						ISC	bulletin
TLB	44.589	28.033	1587.8	199.9						ISC	bulletin
BRD	45.517	27.050	1637.8	210.9						ISC	bulletin
KHI	34.143	58.642	1648.5	210.4						ISC	bulletin
ISR	45.138	26.545	1685.9	213.9						ISC	bulletin
MLR	45.492	25.944	1722.7	216.9						ISC	bulletin
EDC	40.347	27.863	1786.2	228.9						ISC	bulletin
PVL	43.217	25.333	1841.0		234.9					ISC	bulletin
PUL	59.773	30.324	1865.5	230.9						GS	bulletin
BMR	47.673	23.497	1868.6		238.9					ISC	bulletin
DRA	44.679	24.256	1873.4		239.9					ISC	bulletin
DIM	42.050	25.533	1874.4		240.9					ISC	bulletin
CJR	46.713	23.598	1875.1		235.9					ISC	bulletin
KDZ	41.650	25.417	1901.6		240.9					ISC	bulletin
DEV	45.883	22.903	1944.6		246.9					ISC	bulletin
UZH	48.631	22.293	1948.8	241.9						GS	bulletin
CLO	45.074	22.802	1972.9		248.9					ISC	bulletin
KUL	37.900	69.780	2016.0	251.2						GS	bulletin
VTS	42.592	23.208	2027.7		253.9					ISC	bulletin
ANR	40.750	72.370	2041.1		247.9					GS	bulletin
JOS	48.496	20.539	2078.9		256.5					ISC	bulletin
SPC	49.189	20.245	2094.9		259.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:05:00.08	46.752	48.258

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KRA	50.058	19.940	2113.4		259.5					ISC	bulletin
FRU	42.830	74.620	2118.1		263.7					GS	bulletin
VAY	41.321	22.570	2132.2		265.3					ISC	bulletin
PSZ	47.919	19.894	2133.3		262.9					ISC	bulletin
BEO	44.821	20.455	2158.8		268.4					ISC	bulletin
NUR	60.509	24.651	2162.8	266.9						ISC	bulletin
KHO	37.480	71.530	2168.2		268.3					GS	bulletin
SKO	41.972	21.439	2188.6		270.2					ISC	bulletin
KBL	34.541	69.043	2205.3		271.4					ISC	bulletin
SUF	62.719	26.151	2252.1	275.2						ISC	bulletin
NRN	41.430	76.000	2283.0		279.7					GS	bulletin
TLG&	43.238	77.225	2301.1		282.1					CSE	record
AAB	43.230	77.230	2301.8		282.5					GS	bulletin
KJF	64.199	27.715	2312.1	280.5			497.9			ISC	bulletin
KSP	50.843	16.293	2370.3		287.1					ISC	bulletin
KSH	39.517	75.923	2372.3		290.9					ISC	bulletin
SOP	47.683	16.558	2384.2		284.8					ISC	bulletin
VKA	48.265	16.318	2392.1		290.5					ISC	bulletin
PRZ	42.480	78.400	2420.6		294.9					GS	bulletin
UPP	59.858	17.627	2471.6		296.3					ISC	bulletin
PRU	49.988	14.542	2499.7		299.9					ISC	bulletin
LCI	40.334	18.112	2517.9		302.9					ISC	bulletin
BRG	50.873	13.943	2535.4		302.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:05:00.08	46.752	48.258

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UME	63.815	20.237	2560.9		305.1					ISC	bulletin
KHC	49.131	13.578	2579.0		307.4					ISC	bulletin
NVS	54.850	83.266	2592.6		308.9					GS	bulletin
CLL	51.308	13.002	2598.7		308.1					ISC	bulletin
SOD	67.371	26.629	2611.6		309.5					ISC	bulletin
WET	49.144	12.878	2629.4		312.4					ISC	bulletin
KBA	47.078	13.345	2634.8		312.6					ISC	bulletin
TRI	45.709	13.764	2639.2		313.0					ISC	bulletin
COP	55.683	12.433	2654.3		314.6					ISC	bulletin
BHG	47.721	12.879	2655.0		314.6					ISC	bulletin
HFS	60.134	13.696	2687.9		316.1					ISC	bulletin
APP	60.539	13.928	2690.2		316.1					ISC	bulletin
MOX	50.665	11.616	2700.7		318.4					ISC	bulletin
SLL	60.476	13.320	2719.6		318.6					ISC	bulletin
TBY	60.079	12.830	2732.1		319.3					ISC	bulletin
DUI	41.658	14.461	2734.5		322.4					ISC	bulletin
GRF	49.692	11.222	2740.4		322.8					ISC	bulletin
FUR	48.163	11.275	2763.4		323.7					ISC	bulletin
ELT	53.253	86.277	2781.4		323.6					GS	bulletin
AQU	42.354	13.403	2785.4		325.4					ISC	bulletin
CTI	46.048	11.650	2787.8		324.9					ISC	bulletin
OGA	46.868	11.025	2811.9		326.5					ISC	bulletin
KEV	69.755	27.007	2813.3		326.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:05:00.08	46.752	48.258

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KIR	67.840	20.417	2832.2		328.0					ISC	bulletin
MNS	42.385	12.680	2839.2		329.1					ISC	bulletin
NB2	61.040	11.215	2847.9		328.0					ISC	bulletin
MUD	56.460	9.170	2865.5		332.2					ISC	bulletin
KON	59.649	9.598	2895.2		334.8					ISC	bulletin
LLS	46.849	9.009	2961.5		338.5					ISC	bulletin
SLE	47.766	8.493	2975.5		340.4					ISC	bulletin
ZUL	47.481	8.390	2990.2		341.3					ISC	bulletin
TMA	46.106	8.873	2993.0		340.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:10:00.10	46.766	48.288

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	430.5	62.4		69.9	110.4		124.9	GS	record
DBC	43.020	46.830	431.4	61.4		70.4	108.4		125.9	GS	record
BUY	42.810	47.130	448.5	64.9						GS	record
PYA	44.033	43.058	509.1	68.4						GS	bulletin
DRN	42.030	48.330	525.6	73.4		86.4				GS	record
UCH&	43.850	42.550	553.7	75.5		91.9	136.0		155.8	CSE	record
BKR	41.733	43.517	675.6	91.9						GS	bulletin
SOC	43.583	39.720	759.3	101.4						GS	bulletin
ANN	44.800	37.433	870.2	113.9						GS	bulletin
OBN	55.115	36.568	1237.2	158.1						GS	bulletin
OBN	55.115	36.568	1237.2	158.1		199.9	277.9		354.9	GS	record
SEVR&	55.200	60.150	1250.2	159.2			282.0		362.0	CSE	record
IR2	35.663	50.898	1250.4	161.9						ISC	bulletin
ARU	56.416	58.570	1284.5	161.9			289.3		351.9	GS	record
ARU	56.416	58.570	1284.5	162.4						GS	bulletin
SVE	56.827	60.637	1401.1	176.5						GS	bulletin
SVE	56.827	60.637	1401.1	176.9			305.9	330.4		GS	record
MHI	36.308	59.472	1484.7	190.4						ISC	bulletin
ZEL&	50.740	28.198	1535.0	190.4			340.0		431.3	CSE	record
KB&	50.425	27.850	1554.4	195.8			346.7		436.8	CSE	record
CFR	45.185	28.153	1564.2	197.9						ISC	bulletin
POD&	50.928	27.675	1574.6	196.5			348.5		443.8	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:10:00.10	46.766	48.288

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PPE	46.217	27.617	1581.9	200.9						ISC	bulletin
TLB	44.589	28.033	1590.2	199.9						ISC	bulletin
CLI	46.550	27.283	1601.4	205.9						ISC	bulletin
ODB	45.775	27.056	1633.6	205.9						ISC	bulletin
BRD	45.517	27.050	1640.0	210.9						ISC	bulletin
KHI	34.143	58.642	1648.4	210.6						ISC	bulletin
VRI	45.870	26.725	1656.7	207.9						ISC	bulletin
ISR	45.138	26.545	1688.1	214.9						ISC	bulletin
MLR	45.492	25.944	1724.9	216.9						ISC	bulletin
EDC	40.347	27.863	1788.8	228.9						ISC	bulletin
MSR	46.038	24.821	1797.8	223.9						ISC	bulletin
CMP	45.268	25.038	1799.5	220.9						ISC	bulletin
PVL	43.217	25.333	1843.4	230.9						ISC	bulletin
PUL	59.773	30.324	1865.4	231.9						GS	bulletin
BMR	47.673	23.497	1870.5	232.9						ISC	bulletin
DRA	44.679	24.256	1875.6		239.9					ISC	bulletin
DIM	42.050	25.533	1876.9		240.9					ISC	bulletin
CJR	46.713	23.598	1877.1	235.9						ISC	bulletin
KDZ	41.650	25.417	1904.1	237.9						ISC	bulletin
DEV	45.883	22.903	1946.7		247.9					ISC	bulletin
UZH	48.631	22.293	1950.6	242.4						GS	bulletin
CLO	45.074	22.802	1975.1	245.9						ISC	bulletin
JER	31.772	35.197	2002.7		251.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:10:00.10	46.766	48.288

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VTS	42.592	23.208	2030.1		254.9					ISC	bulletin
JOS	48.496	20.539	2080.7	257.3						ISC	bulletin
NIE	49.419	20.313	2090.3	257.4						ISC	bulletin
SPC	49.189	20.245	2096.6	259.7						ISC	bulletin
KRA	50.058	19.940	2115.0	259.2						ISC	bulletin
VAY	41.321	22.570	2134.6		265.3					ISC	bulletin
PSZ	47.919	19.894	2135.2	263.9						ISC	bulletin
BEO	44.821	20.455	2161.0		268.6					ISC	bulletin
NUR	60.509	24.651	2162.9	263.8			478.9			ISC	bulletin
SKO	41.972	21.439	2191.0		271.4					ISC	bulletin
KBL	34.541	69.043	2204.1		272.0					ISC	bulletin
SUF	62.719	26.151	2251.9	275.2						ISC	bulletin
NRN	41.430	76.000	2280.9	279.4						GS	bulletin
TLG&	43.238	77.225	2298.8		282.1					CSE	record
AAB	43.230	77.230	2299.5		282.1					GS	bulletin
KJF	64.199	27.715	2311.7	279.9			496.9			ISC	bulletin
TIR	41.348	19.865	2338.7		286.3					ISC	bulletin
KSH	39.517	75.923	2370.3		292.9					ISC	bulletin
KSP	50.843	16.293	2371.8		287.2					ISC	bulletin
SOP	47.683	16.558	2386.0		284.9					ISC	bulletin
VKA	48.265	16.318	2393.9		290.4					ISC	bulletin
PRZ	42.480	78.400	2418.3		293.9					GS	bulletin
UPP	59.858	17.627	2472.0		295.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:10:00.10	46.766	48.288

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PRU	49.988	14.542	2501.3		299.9					ISC	bulletin
LCI	40.334	18.112	2520.3		302.9					ISC	bulletin
BRG	50.873	13.943	2536.9		302.9					ISC	bulletin
UME	63.815	20.237	2560.8		305.1					ISC	bulletin
LJU	46.043	14.533	2574.1		309.7					ISC	bulletin
KHC	49.131	13.578	2580.7		307.4					ISC	bulletin
NVS	54.850	83.266	2589.8		308.8					GS	bulletin
CLL	51.308	13.002	2600.2		308.1					ISC	bulletin
SOD	67.371	26.629	2610.9		308.3					ISC	bulletin
WET	49.144	12.878	2631.1		311.9					ISC	bulletin
KBA	47.078	13.345	2636.7		312.8					ISC	bulletin
TRI	45.709	13.764	2641.2		313.6					ISC	bulletin
COP	55.683	12.433	2655.3		314.6					ISC	bulletin
BHG	47.721	12.879	2656.8		315.9					ISC	bulletin
HOF	50.314	11.877	2687.4		318.3					ISC	bulletin
HFS	60.134	13.696	2688.4		316.3					ISC	bulletin
APP	60.539	13.928	2690.6		316.2					ISC	bulletin
MOX	50.665	11.616	2702.2		318.4					ISC	bulletin
SLL	60.476	13.320	2720.0		318.8					ISC	bulletin
TBY	60.079	12.830	2732.5		319.4					ISC	bulletin
DUI	41.658	14.461	2736.8		322.4					ISC	bulletin
GRF	49.692	11.222	2742.0		322.8					ISC	bulletin
FUR	48.163	11.275	2765.1		323.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:10:00.10	46.766	48.288

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ELT	53.253	86.277	2778.6		323.7					GS	bulletin
AQU	42.354	13.403	2787.6		325.4					ISC	bulletin
CTI	46.048	11.650	2789.7		324.9					ISC	bulletin
KEV	69.755	27.007	2812.5		326.8					ISC	bulletin
OGA	46.868	11.025	2813.8		326.6					ISC	bulletin
KIR	67.840	20.417	2831.7		328.0					ISC	bulletin
MNS	42.385	12.680	2841.4		329.4					ISC	bulletin
NB2	61.040	11.215	2848.3		328.6					ISC	bulletin
MUD	56.460	9.170	2866.4		332.2					ISC	bulletin
KON	59.649	9.598	2895.8		335.5					ISC	bulletin
LLS	46.849	9.009	2963.3		338.7					ISC	bulletin
SLE	47.766	8.493	2977.2		340.4					ISC	bulletin
ZUL	47.481	8.390	2992.0		341.3					ISC	bulletin
TMA	46.106	8.873	2994.9		340.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:15:00.17	46.760	48.300

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	430.2	61.8			110.8		125.3	GS	record
DBC	43.020	46.830	431.0	62.3						GS	record
BUY	42.810	47.130	448.1	65.3		74.8	113.8		128.8	GS	record
PYA	44.033	43.058	509.4	68.8						GS	bulletin
DRN	42.030	48.330	524.9	73.3		85.3				GS	record
UCH&	43.850	42.550	554.0	75.3		92.0	135.7		155.7	CSE	record
BKR	41.733	43.517	675.6	93.8						GS	bulletin
KRV	40.647	46.319	696.7	92.8						GS	bulletin
SOC	43.583	39.720	759.8	101.3						GS	bulletin
OBN	55.115	36.568	1238.2	158.3			275.8		353.8	GS	record
OBN	55.115	36.568	1238.2	158.8						GS	bulletin
IR2	35.663	50.898	1249.6	161.3						ISC	bulletin
SEVR&	55.200	60.150	1250.2	159.0			280.0		361.6	CSE	record
ARU	56.416	58.570	1284.7	161.8			288.0		352.8	GS	record
ARU	56.416	58.570	1284.7	162.3						GS	bulletin
SVE	56.827	60.637	1401.2	175.8						GS	bulletin
SVE	56.827	60.637	1401.2	176.4			305.8	330.8		GS	record
MHI	36.308	59.472	1483.6	189.0						ISC	bulletin
ZEL&	50.740	28.198	1536.1	190.4			342.4		434.6	CSE	record
KB&	50.425	27.850	1555.5	194.9			344.9		435.5	CSE	record
CFR	45.185	28.153	1565.1	197.8						ISC	bulletin
POD&	50.928	27.675	1575.7	195.7			350.7		440.6	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:15:00.17	46.760	48.300

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TLB	44.589	28.033	1591.1	199.8						ISC	bulletin
ODB	45.775	27.056	1634.5	206.8						ISC	bulletin
BRD	45.517	27.050	1640.9	209.8						ISC	bulletin
KHI	34.143	58.642	1647.3	210.3						ISC	bulletin
VRI	45.870	26.725	1657.7	207.8						ISC	bulletin
ISR	45.138	26.545	1689.0	213.8						ISC	bulletin
SAM	39.660	66.950	1700.4	214.8						GS	bulletin
DMK	41.822	27.757	1720.9	214.9						ISC	bulletin
MLR	45.492	25.944	1725.8	215.8						ISC	bulletin
EDC	40.347	27.863	1789.5	227.8						ISC	bulletin
CMP	45.268	25.038	1800.4	226.8						ISC	bulletin
PVL	43.217	25.333	1844.3	231.8						ISC	bulletin
PUL	59.773	30.324	1866.5	230.8						GS	bulletin
BMR	47.673	23.497	1871.6	233.8						ISC	bulletin
DRA	44.679	24.256	1876.6		237.8					ISC	bulletin
DIM	42.050	25.533	1877.7		240.8					ISC	bulletin
KDZ	41.650	25.417	1904.9	237.8						ISC	bulletin
DEV	45.883	22.903	1947.7	242.8						ISC	bulletin
UZH	48.631	22.293	1951.7	242.8						GS	bulletin
GZR	45.393	22.777	1969.3	247.8						ISC	bulletin
CLO	45.074	22.802	1976.0	245.8						ISC	bulletin
KUL	37.900	69.780	2013.3	251.6						GS	bulletin
VTS	42.592	23.208	2030.9	253.8						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:15:00.17	46.760	48.300

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SSA	44.863	21.743	2062.6	255.8						ISC	bulletin
JOS	48.496	20.539	2081.8	257.8						ISC	bulletin
NIE	49.419	20.313	2091.4	257.8						ISC	bulletin
SPC	49.189	20.245	2097.6	258.9						ISC	bulletin
FRU	42.830	74.620	2114.9		261.8					GS	bulletin
KRA	50.058	19.940	2116.1	259.8						ISC	bulletin
VAY	41.321	22.570	2135.5		265.4					ISC	bulletin
PSZ	47.919	19.894	2136.2	263.3						ISC	bulletin
BEO	44.821	20.455	2161.9		268.8					ISC	bulletin
NUR	60.509	24.651	2164.0	263.8				476.8		ISC	bulletin
NUR	60.509	24.651	2164.0							ISC	bulletin
SKO	41.972	21.439	2191.8		271.3					ISC	bulletin
SUF	62.719	26.151	2252.9	275.2						ISC	bulletin
NRN	41.430	76.000	2279.9		279.2					GS	bulletin
TLG&	43.238	77.225	2297.9		282.0					CSE	record
AAB	43.230	77.230	2298.6		282.0					GS	bulletin
KJF	64.199	27.715	2312.7	280.2						ISC	bulletin
KSH	39.517	75.923	2369.3		290.8					ISC	bulletin
KSP	50.843	16.293	2372.9		287.1					ISC	bulletin
SOP	47.683	16.558	2387.0		285.0					ISC	bulletin
VKA	48.265	16.318	2395.0		291.1					ISC	bulletin
PRZ	42.480	78.400	2417.4		293.8					GS	bulletin
UPP	59.858	17.627	2473.1		296.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:15:00.17	46.760	48.300

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PRU	49.988	14.542	2502.4		299.8					ISC	bulletin
LCI	40.334	18.112	2521.2		302.8					ISC	bulletin
BRG	50.873	13.943	2538.0		303.0					ISC	bulletin
UME	63.815	20.237	2561.9		304.1					ISC	bulletin
KHC	49.131	13.578	2581.8		307.5					ISC	bulletin
NVS	54.850	83.266	2589.4		308.5					GS	bulletin
CLL	51.308	13.002	2601.3		308.4					ISC	bulletin
SOD	67.371	26.629	2611.9		309.0					ISC	bulletin
WET	49.144	12.878	2632.2		312.0					ISC	bulletin
KBA	47.078	13.345	2637.7		312.7					ISC	bulletin
TRI	45.709	13.764	2642.2		313.3					ISC	bulletin
COP	55.683	12.433	2656.4		314.7					ISC	bulletin
BHG	47.721	12.879	2657.8		314.9					ISC	bulletin
ORI	40.064	16.449	2661.0		316.8					ISC	bulletin
USK	50.937	84.773	2685.9		317.3					GS	bulletin
HOF	50.314	11.877	2688.5		317.1					ISC	bulletin
HFS	60.134	13.696	2689.5		316.0					ISC	bulletin
APP	60.539	13.928	2691.7		316.0					ISC	bulletin
MOX	50.665	11.616	2703.3		318.3					ISC	bulletin
SLL	60.476	13.320	2721.1		318.5					ISC	bulletin
TBY	60.079	12.830	2733.7		319.2					ISC	bulletin
DUI	41.658	14.461	2737.7		322.3					ISC	bulletin
GRF	49.692	11.222	2743.1		322.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/16/82	06:15:00.17	46.760	48.300

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
FUR	48.163	11.275	2766.2		324.0					ISC	bulletin
ELT	53.253	86.277	2778.1		323.4					GS	bulletin
AQU	42.354	13.403	2788.5		325.3					ISC	bulletin
CTI	46.048	11.650	2790.8		324.8					ISC	bulletin
GAP	47.477	11.064	2796.8		325.5					ISC	bulletin
KEV	69.755	27.007	2813.4		326.8					ISC	bulletin
OGA	46.868	11.025	2814.8		326.8					ISC	bulletin
KIR	67.840	20.417	2832.7		328.2					ISC	bulletin
MNS	42.385	12.680	2842.3		329.3					ISC	bulletin
NB2	61.040	11.215	2849.4		328.2					ISC	bulletin
MUD	56.460	9.170	2867.5		332.3					ISC	bulletin
SAL	45.607	10.526	2888.0		332.8					ISC	bulletin
KON	59.649	9.598	2896.9		334.4					ISC	bulletin
LLS	46.849	9.009	2964.4		338.8					ISC	bulletin
PCN	45.050	9.667	2970.4		341.3					ISC	bulletin
SLE	47.766	8.493	2978.3		340.6					ISC	bulletin
ZUL	47.481	8.390	2993.0		341.4					ISC	bulletin
TMA	46.106	8.873	2995.9		340.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	03:59:59.99	51.363	53.306

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	659.5	87.7						GS	bulletin
ARU	56.416	58.570	659.5	88.0		107.0	156.6		187.6	GS	record
SVE	56.827	60.637	773.1	102.2			182.0			GS	bulletin
SVE	56.827	60.637	773.1	102.7		126.5	176.0			GS	record
DLM	43.070	46.630	1049.4	136.0		174.5	236.0			GS	record
BUY	42.810	47.130	1058.2	137.6		174.5	240.0			GS	record
MOS	55.738	37.625	1143.6	148.0			262.0			GS	bulletin
BRV	53.083	70.250	1169.9	150.0						GS	bulletin
OBN	55.115	36.568	1188.6	151.6						GS	bulletin
OBN	55.115	36.568	1188.6	153.0		193.0	270.0		339.0	GS	record
KRV	40.647	46.319	1305.3	166.0			290.0			GS	bulletin
ANN	44.800	37.433	1383.9	174.7			308.2			GS	bulletin
SAM	39.660	66.950	1674.2	209.9						GS	bulletin
MHI	36.308	59.472	1740.9	218.0			382.0			ISC	bulletin
KIS	46.998	28.818	1838.8	229.0			422.0			GS	bulletin
MSL	36.382	43.148	1847.6	232.8						ISC	bulletin
DSH	38.570	68.760	1862.8	234.0						GS	bulletin
FRU	42.830	74.620	1863.6	233.8						GS	bulletin
ANR	40.750	72.370	1877.0	235.9						GS	bulletin
BIR	46.266	27.626	1955.9		248.0					ISC	bulletin
KHI	34.143	58.642	1958.2	244.0						ISC	bulletin
KUL	37.900	69.780	1975.0	247.5						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	03:59:59.99	51.363	53.306

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CFR	45.185	28.153	1975.6	246.5						ISC	bulletin
TLG&	43.238	77.225	2007.3	250.1	254.1			460.1	571.4	CSE	record
AAB	43.230	77.230	2008.2	250.0						GS	bulletin
TLB	44.589	28.033	2016.9	251.0						ISC	bulletin
NUR	60.509	24.651	2035.3	249.6			453.0			ISC	bulletin
VRI	45.870	26.725	2037.9	253.5						ISC	bulletin
SUF	62.719	26.151	2050.5	251.7						ISC	bulletin
KJF	64.199	27.715	2061.0	252.0						ISC	bulletin
LVV	49.819	24.031	2064.6	255.9				470.0		GS	bulletin
KHO	37.480	71.530	2103.9		263.1					GS	bulletin
APA	67.558	33.442	2104.6	258.8						GS	bulletin
MLR	45.492	25.944	2111.2		262.0					ISC	bulletin
PRZ	42.480	78.400	2134.3		266.6					GS	bulletin
GPA	40.289	30.309	2152.7		265.8					ISC	bulletin
HRT	40.822	29.668	2154.0		266.0					ISC	bulletin
MSR	46.038	24.821	2161.3		267.0					ISC	bulletin
ISK	41.066	29.059	2175.5		268.2					ISC	bulletin
CGN	44.167	26.000	2179.8		271.5					ISC	bulletin
USK	50.937	84.773	2183.6		269.4					GS	bulletin
CMP	45.268	25.038	2185.4		265.0					ISC	bulletin
DMK	41.822	27.757	2208.0		267.3					ISC	bulletin
CTT	41.147	28.430	2210.4		272.7					ISC	bulletin
CJR	46.713	23.598	2214.3		276.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	03:59:59.99	51.363	53.306

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UZH	48.631	22.293	2225.4		272.5					GS	bulletin
COZ	45.321	24.343	2230.8		266.5					ISC	bulletin
ELT	53.253	86.277	2236.9		273.0					GS	bulletin
ALT	39.055	30.110	2259.4		276.5					ISC	bulletin
DRA	44.679	24.256	2270.9		277.0					ISC	bulletin
DEV	45.883	22.903	2302.1		282.5					ISC	bulletin
SOD	67.371	26.629	2303.0		279.6					ISC	bulletin
EDC	40.347	27.863	2304.0		281.5					ISC	bulletin
NIE	49.419	20.313	2334.3		283.8					ISC	bulletin
KRA	50.058	19.940	2339.0		283.6					ISC	bulletin
GET	40.108	27.567	2340.3		295.2					ISC	bulletin
DIM	42.050	25.533	2341.0		285.0					ISC	bulletin
CLO	45.074	22.802	2350.3		287.5					ISC	bulletin
JOS	48.496	20.539	2352.1		285.0					ISC	bulletin
UME	63.815	20.237	2371.4		285.9					ISC	bulletin
KDZ	41.650	25.417	2374.9		288.0					ISC	bulletin
UPP	59.858	17.627	2400.9		289.0					ISC	bulletin
PSZ	47.919	19.894	2419.6		293.2					ISC	bulletin
EZN	39.826	26.325	2441.1		294.4					ISC	bulletin
ELL	36.748	29.908	2457.8		296.2					ISC	bulletin
KEV	69.755	27.007	2462.3		296.0					ISC	bulletin
CIN	37.600	28.087	2498.3		299.8					ISC	bulletin
BUD	47.484	19.024	2498.4		299.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	03:59:59.99	51.363	53.306

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KIR	67.840	20.417	2552.3		304.1					ISC	bulletin
KSP	50.843	16.293	2563.4		306.0					ISC	bulletin
VAY	41.321	22.570	2588.1		308.0					ISC	bulletin
ZST	48.196	17.103	2601.8		309.3					ISC	bulletin
APP	60.539	13.928	2613.0		315.1					ISC	bulletin
HFS	60.134	13.696	2622.1		310.7					ISC	bulletin
SKO	41.972	21.439	2623.4		312.0					ISC	bulletin
JER	31.772	35.197	2629.3		313.0					ISC	bulletin
SLL	60.476	13.320	2645.7		310.7					ISC	bulletin
VKA	48.265	16.318	2653.2		315.1					ISC	bulletin
VNE	39.312	23.232	2680.6		317.3					ISC	bulletin
KKS	42.076	20.411	2687.4		317.8					ISC	bulletin
BCI	42.367	20.067	2693.2		318.6					ISC	bulletin
NRI	69.430	88.083	2706.9		319.0					GS	record
PRU	49.988	14.542	2710.2		319.1					ISC	bulletin
COP	55.683	12.433	2710.2		318.3					ISC	bulletin
PRA	50.070	14.433	2714.7		320.0					ISC	bulletin
BRG	50.873	13.943	2721.3		320.0					ISC	bulletin
OHR	41.111	20.799	2721.9		319.6					ISC	bulletin
PUK	42.043	19.893	2725.0		320.6					ISC	bulletin
BRN	52.419	13.203	2725.8		321.0					ISC	bulletin
VFI	39.235	22.592	2728.4		320.8					ISC	bulletin
SDA	42.052	19.499	2751.5		322.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	03:59:59.99	51.363	53.306

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VTH	38.201	23.360	2752.7		322.3					ISC	bulletin
KBN	40.624	20.788	2754.6		322.7					ISC	bulletin
NB2	61.040	11.215	2764.6		322.0					ISC	bulletin
TIR	41.348	19.865	2770.5		322.8					ISC	bulletin
CLL	51.308	13.002	2770.8		322.9					ISC	bulletin
VAG	38.316	22.900	2774.2		323.9					ISC	bulletin
VPA	38.782	22.340	2777.4		325.7					ISC	bulletin
KHC	49.131	13.578	2807.3		327.5					ISC	bulletin
KONO	59.649	9.598	2849.8		329.5					ISC	bulletin
WET	49.144	12.878	2854.7		331.2					ISC	bulletin
SRN	39.880	20.001	2857.6		330.5					ISC	bulletin
LJU	46.043	14.533	2876.4		332.7					ISC	bulletin
HOF	50.314	11.877	2879.3		333.0					ISC	bulletin
MOX	50.665	11.616	2884.8		333.0					ISC	bulletin
CEY	45.739	14.427	2898.8		334.2					ISC	bulletin
MUD	56.460	9.170	2900.7		334.3					ISC	bulletin
KBA	47.078	13.345	2909.9		335.5					ISC	bulletin
BHG	47.721	12.879	2913.4		336.9					ISC	bulletin
TRI	45.709	13.764	2946.3		338.0					ISC	bulletin
GRFO	49.691	11.220	2946.5		339.2					ISC	bulletin
LCI	40.334	18.112	2956.0		339.0					ISC	bulletin
BRT	40.878	17.204	2983.1		341.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:04:59.94	51.367	53.327

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	658.4	88.3		104.8	156.7		187.7	GS	record.
ARU	56.416	58.570	658.4	88.6			156.1			GS	bulletin
SVE	56.827	60.637	771.9	102.5		127.6	176.5		226.1	GS	record.
SVE	56.827	60.637	771.9	102.8						GS	bulletin
DLM	43.070	46.630	1050.5	137.1		175.1	238.1			GS	record.
BUY	42.810	47.130	1059.2	137.6		173.1	241.6			GS	record.
PYA	44.033	43.058	1118.8	143.1			254.1			GS	bulletin
MOS	55.738	37.625	1144.6	148.1			262.1			GS	bulletin
BRV	53.083	70.250	1168.3	150.6						GS	bulletin
OBN	55.115	36.568	1189.7	152.1						GS	bulletin
OBN	55.115	36.568	1189.7	153.6		194.1	269.1		340.1	GS	record.
ANN	44.800	37.433	1385.4	174.8			309.3			GS	bulletin
MHI	36.308	59.472	1740.8	218.1						ISC	bulletin
MSL	36.382	43.148	1848.7	233.1						ISC	bulletin
DSH	38.570	68.760	1862.1	235.1						GS	bulletin
FRU	42.830	74.620	1862.4	233.6						GS	bulletin
ANR	40.750	72.370	1876.0	237.1						GS	bulletin
KUL	37.900	69.780	1974.3	247.6						GS	bulletin
TLG&	43.238	77.225	2006.1	250.4	254.4			460.4	571.8	CSE	record
AAB	43.230	77.230	2006.9	250.5						GS	bulletin
TLB	44.589	28.033	2018.5	251.6						ISC	bulletin
NUR	60.509	24.651	2036.1	252.8						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:04:59.94	51.367	53.327

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VRI	45.870	26.725	2039.4	255.4						ISC	bulletin
SUF	62.719	26.151	2051.2	251.1						ISC	bulletin
KJF	64.199	27.715	2061.5	252.6						ISC	bulletin
KHO	37.480	71.530	2103.1	263.1						GS	bulletin
APA	67.558	33.442	2104.8	261.5						GS	bulletin
MLR	45.492	25.944	2112.7		263.1					ISC	bulletin
PRZ	42.480	78.400	2133.0		266.6					GS	bulletin
GPA	40.289	30.309	2154.2		266.2					ISC	bulletin
HRT	40.822	29.668	2155.5		266.1					ISC	bulletin
MSR	46.038	24.821	2162.8	261.1						ISC	bulletin
ISK	41.066	29.059	2177.0		268.6					ISC	bulletin
CGN	44.167	26.000	2181.3		271.1					ISC	bulletin
DMK	41.822	27.757	2209.6		272.4					ISC	bulletin
CTT	41.147	28.430	2211.9		272.3					ISC	bulletin
UZH	48.631	22.293	2226.8	273.6						GS	bulletin
COZ	45.321	24.343	2232.3		275.6					ISC	bulletin
ALT	39.055	30.110	2260.9		276.6					ISC	bulletin
SOD	67.371	26.629	2303.3	280.7						ISC	bulletin
DEV	45.883	22.903	2303.6		282.1					ISC	bulletin
EDC	40.347	27.863	2305.5		281.6					ISC	bulletin
NIE	49.419	20.313	2335.6		283.9					ISC	bulletin
KRA	50.058	19.940	2340.3		283.6					ISC	bulletin
GET	40.108	27.567	2341.9		285.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:04:59.94	51.367	53.327

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DIM	42.050	25.533	2342.5		285.1					ISC	bulletin
CLO	45.074	22.802	2351.8		287.6					ISC	bulletin
JOS	48.496	20.539	2353.5		285.1					ISC	bulletin
BCK	37.461	30.589	2360.1		287.1					ISC	bulletin
UME	63.815	20.237	2372.0		287.0					ISC	bulletin
KDZ	41.650	25.417	2376.5		288.1					ISC	bulletin
UPP	59.858	17.627	2401.8		288.9					ISC	bulletin
PSZ	47.919	19.894	2421.1		293.3					ISC	bulletin
EZN	39.826	26.325	2442.6		295.0					ISC	bulletin
ELL	36.748	29.908	2459.2		296.3					ISC	bulletin
KEV	69.755	27.007	2462.5		296.1					ISC	bulletin
IZM	38.398	27.263	2488.9		299.4					ISC	bulletin
BUD	47.484	19.024	2499.8		299.1					ISC	bulletin
CIN	37.600	28.087	2499.8		300.1					ISC	bulletin
KIR	67.840	20.417	2552.7		303.8					ISC	bulletin
KSP	50.843	16.293	2564.7		306.1					ISC	bulletin
VAY	41.321	22.570	2589.6		308.3					ISC	bulletin
ZST	48.196	17.103	2603.2		307.9					ISC	bulletin
APP	60.539	13.928	2613.9		315.4					ISC	bulletin
HFS	60.134	13.696	2623.0		311.2					ISC	bulletin
SKO	41.972	21.439	2624.9		311.3					ISC	bulletin
JER	31.772	35.197	2630.6		313.1					ISC	bulletin
SLL	60.476	13.320	2646.6		311.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:04:59.94	51.367	53.327

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VKA	48.265	16.318	2654.6		315.2					ISC	bulletin
VNE	39.312	23.232	2682.1		317.3					ISC	bulletin
VGL	39.446	22.884	2695.7		319.0					ISC	bulletin
VMA	38.706	23.588	2702.3		317.9					ISC	bulletin
NRI	69.430	88.083	2705.8		319.1					GS	record.
COP	55.683	12.433	2711.3		318.5					ISC	bulletin
PRU	49.988	14.542	2711.5		318.8					ISC	bulletin
PRA	50.070	14.433	2716.0		321.1					ISC	bulletin
BRG	50.873	13.943	2722.6		320.1					ISC	bulletin
OHR	41.111	20.799	2723.4		319.9					ISC	bulletin
VFI	39.235	22.592	2729.9		320.2					ISC	bulletin
ATH	37.972	23.717	2747.9		323.6					ISC	bulletin
VTH	38.201	23.360	2754.2		321.7					ISC	bulletin
NB2	61.040	11.215	2765.5		322.1					ISC	bulletin
CLL	51.308	13.002	2772.1		323.3					ISC	bulletin
VAG	38.316	22.900	2775.8		323.6					ISC	bulletin
VPA	38.782	22.340	2779.0		325.6					ISC	bulletin
KHC	49.131	13.578	2808.7		327.6					ISC	bulletin
KONO	59.649	9.598	2850.7		329.8					ISC	bulletin
WET	49.144	12.878	2856.0		331.4					ISC	bulletin
LJU	46.043	14.533	2877.8		332.8					ISC	bulletin
HOF	50.314	11.877	2880.6		332.9					ISC	bulletin
MOX	50.665	11.616	2886.1		333.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:04:59.94	51.367	53.327

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CEY	45.739	14.427	2900.3		334.3					ISC	bulletin
MUD	56.460	9.170	2901.8		334.3					ISC	bulletin
KBA	47.078	13.345	2911.4		335.2					ISC	bulletin
BHG	47.721	12.879	2914.8		336.8					ISC	bulletin
TRI	45.709	13.764	2947.8		338.1					ISC	bulletin
GRFO	49.691	11.220	2947.9		339.1					ISC	bulletin
LCI	40.334	18.112	2957.5		339.1					ISC	bulletin
BRT	40.878	17.204	2984.6		341.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:09:59.85	51.380	53.340

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	656.7	87.2			156.2			GS	bulletin
ARU	56.416	58.570	656.7	87.3		105.2	154.8		186.8	GS	record
SVE	56.827	60.637	770.2	102.2			176.2			GS	bulletin
SVE	56.827	60.637	770.2	102.7		125.7	176.2		224.2	GS	record
DLM	43.070	46.630	1052.2	136.7		176.2	236.7			GS	record
BUY	42.810	47.130	1060.9	137.7		173.7	242.7			GS	record
PYA	44.033	43.058	1120.5	143.2			255.7			GS	bulletin
MOS	55.738	37.625	1144.6	148.2			264.2			GS	bulletin
BRV	53.083	70.250	1167.1	150.7						GS	bulletin
OBN	55.115	36.568	1189.8	151.3						GS	bulletin
OBN	55.115	36.568	1189.8	153.2		193.2	269.2		339.2	GS	record
ANN	44.800	37.433	1386.9	175.4			311.2			GS	bulletin
KIS	46.998	28.818	1841.4	234.2						GS	bulletin
MSL	36.382	43.148	1850.4	233.2						ISC	bulletin
FRU	42.830	74.620	1862.1	234.6						GS	bulletin
ANR	40.750	72.370	1876.0	236.8						GS	bulletin
CFR	45.185	28.153	1978.2	247.2						ISC	bulletin
TLG&	43.238	77.225	2005.6	250.4	254.4			460.4	571.7	CSE	record
AAB	43.230	77.230	2006.5	250.4						GS	bulletin
TLB	44.589	28.033	2019.6	251.2						ISC	bulletin
NUR	60.509	24.651	2035.8	250.0						ISC	bulletin
VRI	45.870	26.725	2040.5	257.7						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:09:59.85	51.380	53.340

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SUF	62.719	26.151	2050.7	251.2						ISC	bulletin
KJF	64.199	27.715	2060.9	251.2						ISC	bulletin
CYP	51.293	23.300	2077.1	255.2						ISC	bulletin
KHO	37.480	71.530	2103.3	263.3						GS	bulletin
APA	67.558	33.442	2103.8	262.6						GS	bulletin
MLR	45.492	25.944	2113.8	263.7						ISC	bulletin
PRZ	42.480	78.400	2132.6	266.2						GS	bulletin
GPA	40.289	30.309	2155.6	266.5						ISC	bulletin
HRT	40.822	29.668	2156.9		267.4					ISC	bulletin
MSR	46.038	24.821	2163.8	261.7						ISC	bulletin
ISK	41.066	29.059	2178.4		268.4					ISC	bulletin
CGN	44.167	26.000	2182.5		271.7					ISC	bulletin
DMK	41.822	27.757	2210.9		272.7					ISC	bulletin
CTT	41.147	28.430	2213.3		272.4					ISC	bulletin
UZH	48.631	22.293	2227.6	273.7						GS	bulletin
COZ	45.321	24.343	2233.3		276.7					ISC	bulletin
ALT	39.055	30.110	2262.4		277.2					ISC	bulletin
DRA	44.679	24.256	2273.5		277.2					ISC	bulletin
SOD	67.371	26.629	2302.5	280.5						ISC	bulletin
DEV	45.883	22.903	2304.6		282.2					ISC	bulletin
EDC	40.347	27.863	2306.9		281.7					ISC	bulletin
NIE	49.419	20.313	2336.3		284.0					ISC	bulletin
KRA	50.058	19.940	2341.0		283.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:09:59.85	51.380	53.340

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GET	40.108	27.567	2343.2		285.4					ISC	bulletin
DIM	42.050	25.533	2343.8		285.2					ISC	bulletin
CLO	45.074	22.802	2352.9		287.7					ISC	bulletin
JOS	48.496	20.539	2354.3		285.2					ISC	bulletin
UME	63.815	20.237	2371.6		286.5					ISC	bulletin
KDZ	41.650	25.417	2377.7		288.2					ISC	bulletin
UPP	59.858	17.627	2401.7		289.0					ISC	bulletin
PSZ	47.919	19.894	2421.9		293.4					ISC	bulletin
EZN	39.826	26.325	2443.9		295.1					ISC	bulletin
ELL	36.748	29.908	2460.8		296.4					ISC	bulletin
KEV	69.755	27.007	2461.6		296.2					ISC	bulletin
IZM	38.398	27.263	2490.3		299.5					ISC	bulletin
BUD	47.484	19.024	2500.6		299.2					ISC	bulletin
KIR	67.840	20.417	2552.0		303.7					ISC	bulletin
KSP	50.843	16.293	2565.3		306.2					ISC	bulletin
VAY	41.321	22.570	2590.8		308.6					ISC	bulletin
ZST	48.196	17.103	2604.0		309.0					ISC	bulletin
HFS	60.134	13.696	2622.9		311.6					ISC	bulletin
SKO	41.972	21.439	2626.1		311.7					ISC	bulletin
JER	31.772	35.197	2632.3		313.7					ISC	bulletin
VKA	48.265	16.318	2655.3		315.5					ISC	bulletin
VNE	39.312	23.232	2683.4		317.5					ISC	bulletin
VGL	39.446	22.884	2697.0		320.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:09:59.85	51.380	53.340

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	2704.1		319.2					GS	record
COP	55.683	12.433	2711.5		318.7					ISC	bulletin
PRU	49.988	14.542	2712.1		319.7					ISC	bulletin
PRA	50.070	14.433	2716.6		320.2					ISC	bulletin
BRG	50.873	13.943	2723.1		319.9					ISC	bulletin
OHR	41.111	20.799	2724.6		320.9					ISC	bulletin
VFI	39.235	22.592	2731.2		320.4					ISC	bulletin
ATH	37.972	23.717	2749.3		323.7					ISC	bulletin
VTH	38.201	23.360	2755.5		322.6					ISC	bulletin
NB2	61.040	11.215	2765.3		322.4					ISC	bulletin
CLL	51.308	13.002	2772.6		323.6					ISC	bulletin
VAG	38.316	22.900	2777.1		324.5					ISC	bulletin
KHC	49.131	13.578	2809.3		327.7					ISC	bulletin
KONO	59.649	9.598	2850.6		329.8					ISC	bulletin
WET	49.144	12.878	2856.6		331.3					ISC	bulletin
LJU	46.043	14.533	2878.7		333.1					ISC	bulletin
HOF	50.314	11.877	2881.2		333.2					ISC	bulletin
MOX	50.665	11.616	2886.6		333.5					ISC	bulletin
CEY	45.739	14.427	2901.1		335.0					ISC	bulletin
MUD	56.460	9.170	2901.9		334.4					ISC	bulletin
KBA	47.078	13.345	2912.1		336.0					ISC	bulletin
BHG	47.721	12.879	2915.5		337.1					ISC	bulletin
GRFO	49.691	11.220	2948.4		339.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/10/83	04:09:59.85	51.380	53.340

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TRI	45.709	13.764	2948.6		338.2					ISC	bulletin
LCI	40.334	18.112	2958.6		339.2					ISC	bulletin
BRT	40.878	17.204	2985.7		352.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:00:00.03	46.783	48.315

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	433.0	62.4			112.0		126.0	GS	record
DBC	43.020	46.830	433.8	61.0						GS	record
BUY	42.810	47.130	450.8	65.0			111.0			GS	record
PYA	44.033	43.058	511.8	69.7						GS	bulletin
KRV	40.647	46.319	699.5	94.0						GS	bulletin
SOC	43.583	39.720	761.9	103.0						GS	bulletin
GRS	39.500	46.330	823.9	109.0						GS	bulletin
SIM	44.949	34.116	1118.3	146.0						GS	bulletin
OBN	55.115	36.568	1236.9	158.0						GS	bulletin
OBN	55.115	36.568	1236.9	158.0		197.0	275.0			GS	record
SEVR&	55.200	60.150	1247.5	157.9			278.4		340.3	CSE	record
TEH	35.738	51.386	1251.3	158.0						ISC	bulletin
ARU	56.416	58.570	1281.9	161.5						GS	bulletin
ARU	56.416	58.570	1281.9	161.5			284.0			GS	record
SVE	56.827	60.637	1398.4	176.0						GS	bulletin
SVE	56.827	60.637	1398.4	176.2			309.5	333.0		GS	record
ZEL&	50.740	28.198	1536.1	193.5			341.8		432.2	CSE	record
KB&	50.425	27.850	1555.6	190.5				356.1	424.8	CSE	record
CFR	45.185	28.153	1566.2	200.0						ISC	bulletin
POD&	50.928	27.675	1575.7	196.0			342.1	363.8	427.4	CSE	record
PPE	46.217	27.617	1583.8	202.0						ISC	bulletin
TLB	44.589	28.033	1592.3	200.0						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:00:00.03	46.783	48.315

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VRI	45.870	26.725	1658.6	209.0						ISC	bulletin
ISR	45.138	26.545	1690.1	214.5						ISC	bulletin
SAM	39.660	66.950	1700.2	215.0						GS	bulletin
MLR	45.492	25.944	1726.8	218.0						ISC	bulletin
TAS	41.340	69.310	1778.8	224.5						GS	bulletin
DST	39.606	28.628	1778.9	229.8						ISC	bulletin
COZ	45.321	24.343	1853.1	234.0						ISC	bulletin
CJR	46.713	23.598	1878.9	237.5						ISC	bulletin
CYP	51.293	23.300	1884.5	234.0						ISC	bulletin
UZH	48.631	22.293	1952.1	243.0						GS	bulletin
CLO	45.074	22.802	1977.0	247.0						ISC	bulletin
JER	31.772	35.197	2005.5		252.0					ISC	bulletin
JOS	48.496	20.539	2082.2	257.9						ISC	bulletin
NIE	49.419	20.313	2091.7	258.0						ISC	bulletin
SPC	49.189	20.245	2098.0	259.0						ISC	bulletin
FRU	42.830	74.620	2113.8		262.0					GS	bulletin
KRA	50.058	19.940	2116.3	260.0						ISC	bulletin
PSZ	47.919	19.894	2136.7		268.0					ISC	bulletin
NUR	60.509	24.651	2162.6	263.5						ISC	bulletin
KHO	37.480	71.530	2165.3		269.8					GS	bulletin
SUF	62.719	26.151	2251.3	275.0						ISC	bulletin
TLG&	43.238	77.225	2296.7		281.9					CSE	record
KJF	64.199	27.715	2310.9	280.3			508.0			ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:00:00.03	46.783	48.315

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZST	48.196	17.103	2338.8	285.0						ISC	bulletin
KSP	50.843	16.293	2373.0	287.0						ISC	bulletin
VKA	48.265	16.318	2395.4	290.0						ISC	bulletin
APA	67.558	33.442	2465.5		294.6					GS	bulletin
ZAG	45.829	15.994	2471.9	293.6						ISC	bulletin
UPP	59.858	17.627	2472.0	295.9						ISC	bulletin
PRU	49.988	14.542	2502.6	300.0						ISC	bulletin
PRA	50.070	14.433	2509.5	300.0						ISC	bulletin
LCI	40.334	18.112	2522.6	303.0						ISC	bulletin
BRG	50.873	13.943	2538.1	303.2						ISC	bulletin
MOA	47.849	14.266	2553.6	305.0						ISC	bulletin
BRT	40.878	17.204	2565.4	307.0						ISC	bulletin
KHC	49.131	13.578	2582.0	307.6						ISC	bulletin
BRN	52.419	13.203	2584.4	308.5						ISC	bulletin
CEY	45.739	14.427	2592.2	310.0						ISC	bulletin
CLL	51.308	13.002	2601.3	308.6						ISC	bulletin
SOD	67.371	26.629	2609.9	308.5						ISC	bulletin
RBL	46.442	13.568	2637.4	313.0						ISC	bulletin
KBA	47.078	13.345	2638.2	313.0						ISC	bulletin
TRI	45.709	13.764	2642.9	313.5						ISC	bulletin
COP	55.683	12.433	2655.9	316.0						ISC	bulletin
HFS	60.134	13.696	2688.5	316.2						ISC	bulletin
MOX	50.665	11.616	2703.4	318.0						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:00:00.03	46.783	48.315

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SGO	40.558	15.308	2725.0	321.5						ISC	bulletin
DUI	41.658	14.461	2738.8	322.0						ISC	bulletin
GRF	49.692	11.222	2743.3	321.0						ISC	bulletin
FUR	48.163	11.275	2766.5	324.0						ISC	bulletin
AQU	42.354	13.403	2789.5	326.0						ISC	bulletin
CTI	46.048	11.650	2791.4	325.0						ISC	bulletin
KEV	69.755	27.007	2811.3	326.4						ISC	bulletin
OGA	46.868	11.025	2815.3	327.1						ISC	bulletin
POI	42.574	12.942	2815.5	328.0						ISC	bulletin
KIR	67.840	20.417	2830.9	328.0						ISC	bulletin
MNS	42.385	12.680	2843.3	329.5						ISC	bulletin
NB2	61.040	11.215	2848.3	328.5						ISC	bulletin
RMP	41.811	12.702	2866.2	331.0						ISC	bulletin
MUD	56.460	9.170	2866.9	332.0						ISC	bulletin
RDP	41.758	12.717	2867.4	333.0						ISC	bulletin
OSS	46.687	10.144	2885.4	332.6						ISC	bulletin
SAL	45.607	10.526	2888.6	333.5						ISC	bulletin
KON	59.649	9.598	2895.9	333.1						ISC	bulletin
SAX	47.251	9.345	2929.3	336.7						ISC	bulletin
VDL	46.486	9.470	2941.0	337.1						ISC	bulletin
LLS	46.849	9.009	2964.8	338.8						ISC	bulletin
BUH	48.676	8.228	2976.8	341.1						ISC	bulletin
SLE	47.766	8.493	2978.7	340.6						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:00:00.03	46.783	48.315

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TMA	46.106	8.873	2996.5	340.8						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:05:00.03	46.788	48.297

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	433.1	63.0			111.0		126.0	GS	record
DBC	43.020	46.830	433.9	62.0						GS	record
BUY	42.810	47.130	451.0	65.0			114.5			GS	record
PYA	44.033	43.058	511.0	69.7						GS	bulletin
KRV	40.647	46.319	699.7	94.0						GS	bulletin
SOC	43.583	39.720	760.9	100.0						GS	bulletin
GRS	39.500	46.330	824.2	109.6						GS	bulletin
OBN	55.115	36.568	1235.6	158.0						GS	bulletin
OBN	55.115	36.568	1235.6	158.0		197.0	275.0			GS	record
SEVR&	55.200	60.150	1247.9	158.1			280.1		342.3	CSE	record
ARU	56.416	58.570	1282.1	161.5						GS	bulletin
ARU	56.416	58.570	1282.1	162.0			286.0			GS	record
SVE	56.827	60.637	1398.7	176.0						GS	bulletin
SVE	56.827	60.637	1398.7	176.0			311.0			GS	record
ZEL&	50.740	28.198	1534.6	197.5			343.0		433.1	CSE	record
KB&	50.425	27.850	1554.1	190.4			336.1	362.7	424.1	CSE	record
CFR	45.185	28.153	1564.8	200.0						ISC	bulletin
TLB	44.589	28.033	1590.9	200.0						ISC	bulletin
ISR	45.138	26.545	1688.7	215.0						ISC	bulletin
SAM	39.660	66.950	1701.7	214.0						GS	bulletin
MLR	45.492	25.944	1725.4	218.0						ISC	bulletin
TAS	41.340	69.310	1780.3	223.5						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:05:00.03	46.788	48.297

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CYP	51.293	23.300	1883.0	235.0						ISC	bulletin
SHI	29.644	52.526	1934.8	243.0						ISC	bulletin
DEV	45.883	22.903	1947.1	247.0						ISC	bulletin
UZH	48.631	22.293	1950.6	243.0						GS	bulletin
CLO	45.074	22.802	1975.6	247.0						ISC	bulletin
JER	31.772	35.197	2005.0		252.0					ISC	bulletin
JOS	48.496	20.539	2080.7	257.0						ISC	bulletin
NIE	49.419	20.313	2090.2	258.0						ISC	bulletin
SPC	49.189	20.245	2096.5	259.3						ISC	bulletin
KRA	50.058	19.940	2114.8	259.0						ISC	bulletin
FRU	42.830	74.620	2115.2	261.0						GS	bulletin
PSZ	47.919	19.894	2135.3		268.0					ISC	bulletin
NUR	60.509	24.651	2161.4		264.0					ISC	bulletin
SUF	62.719	26.151	2250.1		275.0					ISC	bulletin
BCI	42.367	20.067	2279.4		279.5					ISC	bulletin
PHP	41.688	20.441	2280.4		277.8					ISC	bulletin
NRN	41.430	76.000	2280.4		273.1					GS	bulletin
TLG&	43.238	77.225	2298.1		282.0					CSE	record
KBN	40.624	20.788	2304.2		287.0					ISC	bulletin
PUK	42.043	19.893	2306.5		281.0					ISC	bulletin
KJF	64.199	27.715	2309.8		280.4					ISC	bulletin
SDA	42.052	19.499	2336.1		281.5					ISC	bulletin
ZST	48.196	17.103	2337.3		285.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:05:00.03	46.788	48.297

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TIR	41.348	19.865	2339.6		285.5					ISC	bulletin
BERA	40.703	19.949	2363.8		287.7					ISC	bulletin
KSP	50.843	16.293	2371.5		287.1					ISC	bulletin
VKA	48.265	16.318	2393.9		290.4					ISC	bulletin
APA	67.558	33.442	2464.6		294.6					GS	bulletin
ZAG	45.829	15.994	2470.4		298.1					ISC	bulletin
UPP	59.858	17.627	2470.7		295.2					ISC	bulletin
PRU	49.988	14.542	2501.1		300.0					ISC	bulletin
PRA	50.070	14.433	2508.1		300.0					ISC	bulletin
LCI	40.334	18.112	2521.3		303.0					ISC	bulletin
BRG	50.873	13.943	2536.6		303.1					ISC	bulletin
MOA	47.849	14.266	2552.1		305.0					ISC	bulletin
BRT	40.878	17.204	2564.0		307.0					ISC	bulletin
LJU	46.043	14.533	2574.3		313.0					ISC	bulletin
KHC	49.131	13.578	2580.6		307.5					ISC	bulletin
BRN	52.419	13.203	2582.9		308.0					ISC	bulletin
CEY	45.739	14.427	2590.8		309.4					ISC	bulletin
CLL	51.308	13.002	2599.8		307.9					ISC	bulletin
SOD	67.371	26.629	2608.9		308.5					ISC	bulletin
RBL	46.442	13.568	2635.9		313.0					ISC	bulletin
KBA	47.078	13.345	2636.8		313.5					ISC	bulletin
TRI	45.709	13.764	2641.4		313.5					ISC	bulletin
BHG	47.721	12.879	2656.8		315.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:05:00.03	46.788	48.297

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
HFS	60.134	13.696	2687.1		316.1					ISC	bulletin
MOX	50.665	11.616	2701.9		318.0					ISC	bulletin
SGO	40.558	15.308	2723.6		321.5					ISC	bulletin
DUI	41.658	14.461	2737.4		322.0					ISC	bulletin
GRF	49.692	11.222	2741.8		320.3					ISC	bulletin
FUR	48.163	11.275	2765.0		323.7					ISC	bulletin
ELT	53.253	86.277	2776.8		322.7					GS	bulletin
AQU	42.354	13.403	2788.1		326.0					ISC	bulletin
CTI	46.048	11.650	2789.9		325.0					ISC	bulletin
KEV	69.755	27.007	2810.3		326.4					ISC	bulletin
OGA	46.868	11.025	2813.8		326.8					ISC	bulletin
POI	42.574	12.942	2814.1		328.0					ISC	bulletin
KIR	67.840	20.417	2829.8		328.3					ISC	bulletin
MNS	42.385	12.680	2841.9		329.5					ISC	bulletin
NB2	61.040	11.215	2847.0		328.7					ISC	bulletin
RMP	41.811	12.702	2864.8		331.0					ISC	bulletin
MUD	56.460	9.170	2865.5		332.0					ISC	bulletin
RDP	41.758	12.717	2866.0		332.0					ISC	bulletin
OSS	46.687	10.144	2884.0		332.5					ISC	bulletin
SAL	45.607	10.526	2887.1		333.5					ISC	bulletin
KON	59.649	9.598	2894.6		332.8					ISC	bulletin
SAX	47.251	9.345	2927.8		336.4					ISC	bulletin
VDL	46.486	9.470	2939.5		337.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:05:00.03	46.788	48.297

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GIB	37.989	14.027	2955.0		339.0					ISC	bulletin
LLS	46.849	9.009	2963.4		338.7					ISC	bulletin
BUH	48.676	8.228	2975.3		341.1					ISC	bulletin
SLE	47.766	8.493	2977.2		340.5					ISC	bulletin
ZUL	47.481	8.390	2991.9		341.3					ISC	bulletin
TMA	46.106	8.873	2995.0		340.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:10:00.08	46.767	48.310

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	431.2	62.4			111.4		125.9	GS	record
DBC	43.020	46.830	432.0	60.9						GS	record
BUY	42.810	47.130	449.0	64.4			114.9		128.9	GS	record
PYA	44.033	43.058	510.5	69.8						GS	bulletin
KRV	40.647	46.319	697.7	93.9						GS	bulletin
SOC	43.583	39.720	760.8	102.4			175.9			GS	bulletin
GRS	39.500	46.330	822.1	108.7						GS	bulletin
OBN	55.115	36.568	1238.1	158.9						GS	bulletin
OBN	55.115	36.568	1238.1	158.9		196.7	274.9		353.9	GS	record
SEVR&	55.200	60.150	1249.1	158.0			280.3		342.9	CSE	record
TEH	35.738	51.386	1249.7	157.9						ISC	bulletin
ARU	56.416	58.570	1283.6	161.9						GS	bulletin
ARU	56.416	58.570	1283.6	161.9			289.9			GS	record
SVE	56.827	60.637	1400.1	176.5						GS	bulletin
SVE	56.827	60.637	1400.1	176.5			306.9	331.9		GS	record
ZEL&	50.740	28.198	1536.5	198.2			343.0		433.6	CSE	record
KB&	50.425	27.850	1555.9	190.5			336.0		424.4	CSE	record
CFR	45.185	28.153	1565.8	200.4						ISC	bulletin
POD&	50.928	27.675	1576.1	194.9						CSE	record
TLB	44.589	28.033	1591.8	200.4						ISC	bulletin
ISR	45.138	26.545	1689.8	214.9						ISC	bulletin
CYP	51.293	23.300	1884.9	235.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:10:00.08	46.767	48.310

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DEV	45.883	22.903	1948.4	248.9						ISC	bulletin
UZH	48.631	22.293	1952.2	242.9						GS	bulletin
CLO	45.074	22.802	1976.7	246.9						ISC	bulletin
JER	31.772	35.197	2003.8	252.9						ISC	bulletin
JOS	48.496	20.539	2082.3	256.9						ISC	bulletin
NIE	49.419	20.313	2091.9	257.9						ISC	bulletin
SPC	49.189	20.245	2098.1	260.2						ISC	bulletin
FRU	42.830	74.620	2114.2	261.9						GS	bulletin
KRA	50.058	19.940	2116.5	258.9						ISC	bulletin
PSZ	47.919	19.894	2136.8	268.9						ISC	bulletin
NUR	60.509	24.651	2163.8	263.9						ISC	bulletin
SUF	62.719	26.151	2252.6	274.9						ISC	bulletin
BCI	42.367	20.067	2280.4		279.9					ISC	bulletin
PHP	41.688	20.441	2281.2		280.2					ISC	bulletin
TLG&	43.238	77.225	2297.1		282.0					CSE	record
PUK	42.043	19.893	2307.4		280.3					ISC	bulletin
KJF	64.199	27.715	2312.3	280.9						ISC	bulletin
ZST	48.196	17.103	2338.9		285.8					ISC	bulletin
TIR	41.348	19.865	2340.4		285.4					ISC	bulletin
KSP	50.843	16.293	2373.3		287.4					ISC	bulletin
VKA	48.265	16.318	2395.5		290.5					ISC	bulletin
APA	67.558	33.442	2467.1		295.0					GS	bulletin
UPP	59.858	17.627	2473.1		296.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:10:00.08	46.767	48.310

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PRU	49.988	14.542	2502.8		299.9					ISC	bulletin
PRA	50.070	14.433	2509.8		299.9					ISC	bulletin
BRG	50.873	13.943	2538.4		303.1					ISC	bulletin
MOA	47.849	14.266	2553.7		304.9					ISC	bulletin
BRT	40.878	17.204	2564.9		306.9					ISC	bulletin
LJU	46.043	14.533	2575.7		308.4					ISC	bulletin
KHC	49.131	13.578	2582.3		308.0					ISC	bulletin
BRN	52.419	13.203	2584.9		307.9					ISC	bulletin
CEY	45.739	14.427	2592.2		309.4					ISC	bulletin
CLL	51.308	13.002	2601.7		309.0					ISC	bulletin
SOD	67.371	26.629	2611.4		309.2					ISC	bulletin
RBL	46.442	13.568	2637.4		312.9					ISC	bulletin
KBA	47.078	13.345	2638.3		313.1					ISC	bulletin
TRI	45.709	13.764	2642.8		313.4					ISC	bulletin
BHG	47.721	12.879	2658.4		314.9					ISC	bulletin
HFS	60.134	13.696	2689.5		316.5					ISC	bulletin
MOX	50.665	11.616	2703.7		318.9					ISC	bulletin
SGO	40.558	15.308	2724.5		321.4					ISC	bulletin
DUI	41.658	14.461	2738.4		322.9					ISC	bulletin
GRF	49.692	11.222	2743.6		319.9					ISC	bulletin
FUR	48.163	11.275	2766.7		323.7					ISC	bulletin
AQU	42.354	13.403	2789.2		326.9					ISC	bulletin
CTI	46.048	11.650	2791.4		324.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:10:00.08	46.767	48.310

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KEV	69.755	27.007	2812.9		326.5					ISC	bulletin
POI	42.574	12.942	2815.2		327.9					ISC	bulletin
OGA	46.868	11.025	2815.4		327.4					ISC	bulletin
KIR	67.840	20.417	2832.3		328.0					ISC	bulletin
MNS	42.385	12.680	2843.1		329.9					ISC	bulletin
NB2	61.040	11.215	2849.4		328.7					ISC	bulletin
RMP	41.811	12.702	2865.9		330.9					ISC	bulletin
OSS	46.687	10.144	2885.5		332.6					ISC	bulletin
KON	59.649	9.598	2896.9		334.6					ISC	bulletin
SAX	47.251	9.345	2929.4		336.5					ISC	bulletin
VDL	46.486	9.470	2941.0		336.9					ISC	bulletin
LLS	46.849	9.009	2964.9		338.9					ISC	bulletin
BUH	48.676	8.228	2977.0		342.3					ISC	bulletin
SLE	47.766	8.493	2978.8		340.4					ISC	bulletin
ZUL	47.481	8.390	2993.5		341.4					ISC	bulletin
TMA	46.106	8.873	2996.5		340.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:15:00.14	46.749	48.303

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	429.1	62.4			110.9		125.9	GS	record
DBC	43.020	46.830	429.9	61.4						GS	record
BUY	42.810	47.130	446.9	63.9			112.9		128.9	GS	record
KRV	40.647	46.319	695.6	93.9						GS	bulletin
SOC	43.583	39.720	759.5	102.4						GS	bulletin
GRS	39.500	46.330	820.0	108.5						GS	bulletin
OBN	55.115	36.568	1239.4	157.9						GS	bulletin
OBN	55.115	36.568	1239.4	158.9		198.7	275.4		353.9	GS	record
TEH	35.738	51.386	1247.8	158.9						ISC	bulletin
SEVR&	55.200	60.150	1251.0	159.2			280.2		342.3	CSE	record
ARU	56.416	58.570	1285.6	161.9						GS	bulletin
ARU	56.416	58.570	1285.6	161.9			286.9			GS	record
SVE	56.827	60.637	1402.1	176.0						GS	bulletin
SVE	56.827	60.637	1402.1	176.4			305.9			GS	record
MHI	36.308	59.472	1482.6	188.9						ISC	bulletin
ZEL&	50.740	28.198	1536.8	193.1			340.6		431.1	CSE	record
KB&	50.425	27.850	1556.2	190.9			335.1		423.6	CSE	record
POD&	50.928	27.675	1576.4	196.0			349.2	364.2	427.7	CSE	record
TLB	44.589	28.033	1591.3	200.4						ISC	bulletin
VRI	45.870	26.725	1658.0	207.9						ISC	bulletin
ISR	45.138	26.545	1689.3	214.9						ISC	bulletin
SAM	39.660	66.950	1699.7	213.9						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:15:00.14	46.749	48.303

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MLR	45.492	25.944	1726.2	217.9						ISC	bulletin
TAS	41.340	69.310	1778.9	223.4						GS	bulletin
LRR	45.440	25.075	1793.6	225.9						ISC	bulletin
CYP	51.293	23.300	1885.2	233.9						ISC	bulletin
BURJ	32.242	35.804	1928.2		246.6					ISC	bulletin
RUMJ	32.182	35.827	1932.9		246.1					ISC	bulletin
DEV	45.883	22.903	1948.0		248.9					ISC	bulletin
UZH	48.631	22.293	1952.2	242.9						GS	bulletin
SALJ	32.009	35.685	1956.2		247.1					ISC	bulletin
KFNJ	31.862	35.676	1970.8		249.9					ISC	bulletin
CLO	45.074	22.802	1976.3	246.9						ISC	bulletin
MASJ	31.729	35.718	1981.6		251.1					ISC	bulletin
JER	31.772	35.197	2001.9		251.4					ISC	bulletin
MKRJ	31.552	35.641	2002.3		252.4					ISC	bulletin
BZS	45.617	21.617	2052.1		256.9					ISC	bulletin
JOS	48.496	20.539	2082.3	256.9						ISC	bulletin
NIE	49.419	20.313	2092.0	258.1						ISC	bulletin
SPC	49.189	20.245	2098.2	261.1						ISC	bulletin
FRU	42.830	74.620	2114.6		262.6					GS	bulletin
KRA	50.058	19.940	2116.7	259.9						ISC	bulletin
PSZ	47.919	19.894	2136.7		267.9					ISC	bulletin
NUR	60.509	24.651	2165.1	263.9			475.9			ISC	bulletin
SUF	62.719	26.151	2254.1	274.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:15:00.14	46.749	48.303

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRN	41.430	76.000	2279.6		279.6					GS	bulletin
BCI	42.367	20.067	2279.7		279.9					ISC	bulletin
PHP	41.688	20.441	2280.5		275.7					ISC	bulletin
TLG&	43.238	77.225	2297.7		281.9					CSE	record
KBN	40.624	20.788	2304.1		280.7					ISC	bulletin
PUK	42.043	19.893	2306.8		280.5					ISC	bulletin
KJF	64.199	27.715	2313.9		280.9					ISC	bulletin
ZST	48.196	17.103	2338.9		284.9					ISC	bulletin
TIR	41.348	19.865	2339.7		285.9					ISC	bulletin
BERA	40.703	19.949	2363.7		287.6					ISC	bulletin
KSP	50.843	16.293	2373.6		287.1					ISC	bulletin
VKA	48.265	16.318	2395.5		290.7					ISC	bulletin
APA	67.558	33.442	2468.9		295.0					GS	bulletin
ZAG	45.829	15.994	2471.6		295.4					ISC	bulletin
UPP	59.858	17.627	2474.2		296.2					ISC	bulletin
PRU	49.988	14.542	2503.0		299.9					ISC	bulletin
PRA	50.070	14.433	2510.0		299.9					ISC	bulletin
LCI	40.334	18.112	2521.3		302.9					ISC	bulletin
BRG	50.873	13.943	2538.7		303.1					ISC	bulletin
MOA	47.849	14.266	2553.7		304.9					ISC	bulletin
BRT	40.878	17.204	2564.2		307.1					ISC	bulletin
LJU	46.043	14.533	2575.6		308.9					ISC	bulletin
KHC	49.131	13.578	2582.4		307.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:15:00.14	46.749	48.303

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRN	52.419	13.203	2585.3		308.4					ISC	bulletin
CEY	45.739	14.427	2592.0		309.3					ISC	bulletin
CLL	51.308	13.002	2602.0		308.0					ISC	bulletin
SOD	67.371	26.629	2613.1		309.2					ISC	bulletin
WET	49.144	12.878	2632.8		313.1					ISC	bulletin
RBL	46.442	13.568	2637.3		312.9					ISC	bulletin
KBA	47.078	13.345	2638.2		313.3					ISC	bulletin
TRI	45.709	13.764	2642.6		313.4					ISC	bulletin
COP	55.683	12.433	2657.3		315.9					ISC	bulletin
HFS	60.134	13.696	2690.6		316.1					ISC	bulletin
MOX	50.665	11.616	2704.0		318.4					ISC	bulletin
SGO	40.558	15.308	2723.9		321.4					ISC	bulletin
DUI	41.658	14.461	2737.9		321.9					ISC	bulletin
GRF	49.692	11.222	2743.8		322.0					ISC	bulletin
FUR	48.163	11.275	2766.7		323.9					ISC	bulletin
AQU	42.354	13.403	2788.8		325.9					ISC	bulletin
CTI	46.048	11.650	2791.2		324.9					ISC	bulletin
PO9	42.574	12.942	2814.8		327.9					ISC	bulletin
OGA	46.868	11.025	2815.3		326.7					ISC	bulletin
KIR	67.840	20.417	2833.9		327.9					ISC	bulletin
MNS	42.385	12.680	2842.6		329.4					ISC	bulletin
NB2	61.040	11.215	2850.5		329.1					ISC	bulletin
RMP	41.811	12.702	2865.4		330.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:15:00.14	46.749	48.303

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RDP	41.758	12.717	2866.6		331.9					ISC	bulletin
MUD	56.460	9.170	2868.4		331.9					ISC	bulletin
OSS	46.687	10.144	2885.4		332.5					ISC	bulletin
SAL	45.607	10.526	2888.4		333.4					ISC	bulletin
KON	59.649	9.598	2897.9		333.1					ISC	bulletin
SAX	47.251	9.345	2929.4		336.6					ISC	bulletin
VDL	46.486	9.470	2941.0		337.0					ISC	bulletin
GIB	37.989	14.027	2954.9		338.9					ISC	bulletin
LLS	46.849	9.009	2964.9		338.9					ISC	bulletin
BUH	48.676	8.228	2977.2		341.2					ISC	bulletin
SLE	47.766	8.493	2978.9		340.5					ISC	bulletin
ZUL	47.481	8.390	2993.6		341.4					ISC	bulletin
TMA	46.106	8.873	2996.4		340.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:19:59.93	46.754	48.289

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DBC	43.020	46.830	430.1	61.6						GS	record
BUY	42.810	47.130	447.2	64.6			114.6		126.6	GS	record
SOC	43.583	39.720	758.8	103.6						GS	bulletin
GRS	39.500	46.330	820.3	109.1						GS	bulletin
OBN	55.115	36.568	1238.3	157.9		197.1	274.1			GS	record
OBN	55.115	36.568	1238.3	158.1						GS	bulletin
SEVR&	55.200	60.150	1251.2	159.0			280.3		342.4	CSE	record
ARU	56.416	58.570	1285.6	162.1						GS	bulletin
ARU	56.416	58.570	1285.6	163.1			286.1			GS	record
SVE	56.827	60.637	1402.2	176.1			306.1	331.1		GS	record
SVE	56.827	60.637	1402.2	176.2						GS	bulletin
MHI	36.308	59.472	1483.7	189.1						ISC	bulletin
ZEL&	50.740	28.198	1535.6	197.5			343.1		432.6	CSE	record
KB&	50.425	27.850	1555.0	190.5			337.1		424.0	CSE	record
POD&	50.928	27.675	1575.2	193.6			345.8	367.3	429.9	CSE	record
VRI	45.870	26.725	1656.9	208.1						ISC	bulletin
ISR	45.138	26.545	1688.2	214.6						ISC	bulletin
MLR	45.492	25.944	1725.0	218.1						ISC	bulletin
TAS	41.340	69.310	1780.1	224.6						GS	bulletin
LRR	45.440	25.075	1792.5	226.1						ISC	bulletin
CYP	51.293	23.300	1884.0	234.1						ISC	bulletin
BURJ	32.242	35.804	1928.0		246.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:19:59.93	46.754	48.289

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RUMJ	32.182	35.827	1932.7		246.4					ISC	bulletin
SMAJ	32.155	35.783	1937.4		247.1					ISC	bulletin
DEV	45.883	22.903	1946.9		248.1					ISC	bulletin
UZH	48.631	22.293	1951.1	243.1						GS	bulletin
SALJ	32.009	35.685	1955.9		248.1					ISC	bulletin
KFNJ	31.862	35.676	1970.6		250.1					ISC	bulletin
CLO	45.074	22.802	1975.2		247.1					ISC	bulletin
MASJ	31.729	35.718	1981.4		251.3					ISC	bulletin
JER	31.772	35.197	2001.7		253.1					ISC	bulletin
MKRJ	31.552	35.641	2002.1		252.4					ISC	bulletin
BZS	45.617	21.617	2051.0	256.1						ISC	bulletin
JOS	48.496	20.539	2081.1	257.1						ISC	bulletin
NIE	49.419	20.313	2090.8	257.8						ISC	bulletin
SPC	49.189	20.245	2097.0	261.5						ISC	bulletin
KRA	50.058	19.940	2115.5	260.1						ISC	bulletin
FRU	42.830	74.620	2115.7	255.9						GS	bulletin
PSZ	47.919	19.894	2135.6		268.1					ISC	bulletin
NUR	60.509	24.651	2164.1	263.7						ISC	bulletin
SUF	62.719	26.151	2253.1	275.1						ISC	bulletin
BCI	42.367	20.067	2278.7		280.1					ISC	bulletin
TLG&	43.238	77.225	2298.7	282.1						CSE	record
PUK	42.043	19.893	2305.7	280.1						ISC	bulletin
KJF	64.199	27.715	2312.9	281.1			511.1			ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:19:59.93	46.754	48.289

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZST	48.196	17.103	2337.7		285.1					ISC	bulletin
TIR	41.348	19.865	2338.7		285.6					ISC	bulletin
KSP	50.843	16.293	2372.4		287.1					ISC	bulletin
VKA	48.265	16.318	2394.3		290.3					ISC	bulletin
APA	67.558	33.442	2468.1		295.2					GS	bulletin
ZAG	45.829	15.994	2470.5		298.3					ISC	bulletin
UPP	59.858	17.627	2473.0		295.3					ISC	bulletin
PRU	49.988	14.542	2501.8		300.1					ISC	bulletin
PRA	50.070	14.433	2508.8		300.1					ISC	bulletin
LCI	40.334	18.112	2520.3		303.1					ISC	bulletin
BRG	50.873	13.943	2537.5		303.2					ISC	bulletin
MOA	47.849	14.266	2552.5		305.1					ISC	bulletin
BRT	40.878	17.204	2563.2		307.1					ISC	bulletin
LJU	46.043	14.533	2574.4		309.1					ISC	bulletin
KHC	49.131	13.578	2581.2		307.7					ISC	bulletin
BRN	52.419	13.203	2584.1		308.6					ISC	bulletin
CEY	45.739	14.427	2590.8		308.9					ISC	bulletin
CLL	51.308	13.002	2600.8		308.5					ISC	bulletin
SOD	67.371	26.629	2612.2		309.2					ISC	bulletin
WET	49.144	12.878	2631.6		312.2					ISC	bulletin
RBL	46.442	13.568	2636.1		313.1					ISC	bulletin
KBA	47.078	13.345	2637.1		312.8					ISC	bulletin
TRI	45.709	13.764	2641.5		313.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:19:59.93	46.754	48.289

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
COP	55.683	12.433	2656.1		316.1					ISC	bulletin
BHG	47.721	12.879	2657.2		314.3					ISC	bulletin
HFS	60.134	13.696	2689.4		316.2					ISC	bulletin
MOX	50.665	11.616	2702.8		318.1					ISC	bulletin
SGO	40.558	15.308	2722.8		321.6					ISC	bulletin
DUI	41.658	14.461	2736.8		322.1					ISC	bulletin
GRF	49.692	11.222	2742.6		322.1					ISC	bulletin
FUR	48.163	11.275	2765.6		324.0					ISC	bulletin
ELT	53.253	86.277	2779.2		323.3					GS	bulletin
AQU	42.354	13.403	2787.7		326.1					ISC	bulletin
CTI	46.048	11.650	2790.1		325.1					ISC	bulletin
POI	42.574	12.942	2813.7		328.1					ISC	bulletin
KEV	69.755	27.007	2813.8		326.4					ISC	bulletin
OGA	46.868	11.025	2814.2		326.8					ISC	bulletin
KIR	67.840	20.417	2833.0		328.0					ISC	bulletin
MNS	42.385	12.680	2841.5		329.6					ISC	bulletin
NB2	61.040	11.215	2849.4		328.7					ISC	bulletin
RMP	41.811	12.702	2864.3		331.1					ISC	bulletin
RDP	41.758	12.717	2865.5		332.1					ISC	bulletin
MUD	56.460	9.170	2867.2		332.4					ISC	bulletin
OSS	46.687	10.144	2884.3		332.6					ISC	bulletin
SAL	45.607	10.526	2887.3		333.6					ISC	bulletin
KON	59.649	9.598	2896.7		333.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:19:59.93	46.754	48.289

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SAX	47.251	9.345	2928.3		336.6					ISC	bulletin
VDL	46.486	9.470	2939.8		337.1					ISC	bulletin
GIB	37.989	14.027	2953.9		339.1					ISC	bulletin
LLS	46.849	9.009	2963.7		338.9					ISC	bulletin
BUH	48.676	8.228	2976.0		341.3					ISC	bulletin
SLE	47.766	8.493	2977.7		340.6					ISC	bulletin
ZUL	47.481	8.390	2992.4		341.5					ISC	bulletin
TMA	46.106	8.873	2995.3		340.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:25:00.00	46.766	48.274

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	430.2	62.5			111.0		126.0	GS	record
DBC	43.020	46.830	431.1	62.0						GS	record
BUY	42.810	47.130	448.3	64.0			115.0			GS	record
PYA	44.033	43.058	508.2	70.0						GS	bulletin
SOC	43.583	39.720	758.3	101.0						GS	bulletin
GRS	39.500	46.330	821.4	108.8						GS	bulletin
OBN	55.115	36.568	1236.5	156.0						GS	bulletin
OBN	55.115	36.568	1236.5	158.8		196.8	275.0		353.0	GS	record
TEH	35.738	51.386	1250.2	158.0						ISC	bulletin
SEVR&	55.200	60.150	1250.9	158.4			280.1		342.7	CSE	record
ARU	56.416	58.570	1285.1	162.0						GS	bulletin
ARU	56.416	58.570	1285.1	163.0			288.0		349.0	GS	record
SVE	56.827	60.637	1401.7	176.0						GS	bulletin
SVE	56.827	60.637	1401.7	176.0			306.0	330.0	389.0	GS	record
MHI	36.308	59.472	1485.5	189.0			337.0			ISC	bulletin
ZEL&	50.740	28.198	1534.0	197.7			342.7		432.1	CSE	record
KB&	50.425	27.850	1553.5	189.9			337.1		424.5	CSE	record
POD&	50.928	27.675	1573.6	195.5			344.1		427.8	CSE	record
TLB	44.589	28.033	1589.1	200.5						ISC	bulletin
VRI	45.870	26.725	1655.6	208.0						ISC	bulletin
SAM	39.660	66.950	1702.5	210.0				390.0		GS	bulletin
MLR	45.492	25.944	1723.8	218.0						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:25:00.00	46.766	48.274

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DST	39.606	28.628	1775.3		229.8					ISC	bulletin
TAS	41.340	69.310	1781.5	223.5						GS	bulletin
LRR	45.440	25.075	1791.2	226.0						ISC	bulletin
BMR	47.673	23.497	1869.5	235.0						ISC	bulletin
CJR	46.713	23.598	1876.1		237.0					ISC	bulletin
CYP	51.293	23.300	1882.4	235.0						ISC	bulletin
SHI	29.644	52.526	1932.8		243.0					ISC	bulletin
DEV	45.883	22.903	1945.6		248.0					ISC	bulletin
UZH	48.631	22.293	1949.6	243.0						GS	bulletin
JER	31.772	35.197	2002.0		252.5					ISC	bulletin
JOS	48.496	20.539	2079.7	257.0						ISC	bulletin
NIE	49.419	20.313	2089.3	257.0						ISC	bulletin
SPC	49.189	20.245	2095.5	258.8						ISC	bulletin
KRA	50.058	19.940	2114.0	259.0						ISC	bulletin
FRU	42.830	74.620	2116.9		263.0					GS	bulletin
PSZ	47.919	19.894	2134.1		268.0					ISC	bulletin
BEO	44.821	20.455	2159.9		267.0					ISC	bulletin
NUR	60.509	24.651	2162.3	264.1				469.0		ISC	bulletin
SUF	62.719	26.151	2251.3		275.0					ISC	bulletin
BCI	42.367	20.067	2277.6		280.0					ISC	bulletin
NRN	41.430	76.000	2282.0		279.6					GS	bulletin
TLG&	43.238	77.225	2299.9		282.0					CSE	record
PUK	42.043	19.893	2304.6		281.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:25:00.00	46.766	48.274

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KJF	64.199	27.715	2311.2	281.0			509.2			ISC	bulletin
ZST	48.196	17.103	2336.3		285.2					ISC	bulletin
TIR	41.348	19.865	2337.7		285.5					ISC	bulletin
KSP	50.843	16.293	2370.8		287.3					ISC	bulletin
VKA	48.265	16.318	2392.9		290.2					ISC	bulletin
APA	67.558	33.442	2466.5		294.6					GS	bulletin
ZAG	45.829	15.994	2469.1		297.2					ISC	bulletin
UPP	59.858	17.627	2471.3		295.5					ISC	bulletin
PRU	49.988	14.542	2500.3		300.0					ISC	bulletin
PRA	50.070	14.433	2507.3		300.0					ISC	bulletin
LCI	40.334	18.112	2519.3		303.0					ISC	bulletin
BRG	50.873	13.943	2535.9		303.1					ISC	bulletin
MOA	47.849	14.266	2551.1		305.0					ISC	bulletin
BRT	40.878	17.204	2562.1		307.0					ISC	bulletin
LJU	46.043	14.533	2573.1		309.0					ISC	bulletin
KHC	49.131	13.578	2579.7		307.6					ISC	bulletin
BRN	52.419	13.203	2582.5		308.5					ISC	bulletin
CEY	45.739	14.427	2589.5		308.5					ISC	bulletin
CLL	51.308	13.002	2599.2		308.1					ISC	bulletin
SOD	67.371	26.629	2610.6		308.7					ISC	bulletin
RBL	46.442	13.568	2634.7		313.0					ISC	bulletin
KBA	47.078	13.345	2635.6		312.8					ISC	bulletin
TRI	45.709	13.764	2640.1		313.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:25:00.00	46.766	48.274

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
COP	55.683	12.433	2654.4		316.0					ISC	bulletin
HFS	60.134	13.696	2687.7		316.2					ISC	bulletin
MOX	50.665	11.616	2701.2		318.0					ISC	bulletin
SGO	40.558	15.308	2721.8		321.5					ISC	bulletin
DUI	41.658	14.461	2735.7		322.0					ISC	bulletin
GRF	49.692	11.222	2741.0		321.8					ISC	bulletin
FUR	48.163	11.275	2764.1		323.7					ISC	bulletin
ELT	53.253	86.277	2779.5		323.7					GS	bulletin
AQU	42.354	13.403	2786.5		326.0					ISC	bulletin
CTI	46.048	11.650	2788.7		325.0					ISC	bulletin
KEV	69.755	27.007	2812.1		326.0					ISC	bulletin
POI	42.574	12.942	2812.5		328.0					ISC	bulletin
OGA	46.868	11.025	2812.7		326.5					ISC	bulletin
KIR	67.840	20.417	2831.3		327.6					ISC	bulletin
MNS	42.385	12.680	2840.3		329.5					ISC	bulletin
NB2	61.040	11.215	2847.6		329.1					ISC	bulletin
RMP	41.811	12.702	2863.2		331.0					ISC	bulletin
RDP	41.758	12.717	2864.4		332.0					ISC	bulletin
MUD	56.460	9.170	2865.5		332.0					ISC	bulletin
OSS	46.687	10.144	2882.8		332.6					ISC	bulletin
SAL	45.607	10.526	2885.9		333.5					ISC	bulletin
KON	59.649	9.598	2895.0		333.7					ISC	bulletin
SAX	47.251	9.345	2926.8		336.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/24/83	05:25:00.00	46.766	48.274

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VDL	46.486	9.470	2938.4		337.0					ISC	bulletin
GIB	37.989	14.027	2952.9		338.5					ISC	bulletin
LLS	46.849	9.009	2962.3		338.5					ISC	bulletin
BUH	48.676	8.228	2974.5		340.9					ISC	bulletin
SLE	47.766	8.493	2976.2		340.4					ISC	bulletin
ZUL	47.481	8.390	2990.9		341.2					ISC	bulletin
TMA	46.106	8.873	2993.8		340.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	02:59:59.81	51.358	53.319

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	659.5	86.9		104.5	157.5		187.5	GS	record
SVE	56.827	60.637	773.1	102.2						GS	bulletin
SVE	56.827	60.637	773.1	103.2		127.2	184.7		222.2	GS	record
DBC	43.020	46.830	1047.2	135.7			237.2			GS	record
BUY	42.810	47.130	1058.1	137.2			245.7		300.2	GS	record
PYA	44.033	43.058	1117.7	142.2			253.2			GS	bulletin
MOS	55.738	37.625	1144.6	147.2						GS	bulletin
AKT	41.480	47.730	1176.9	152.2			273.2		331.2	GS	record
OBN	55.115	36.568	1189.6	152.0		193.2	265.2		338.2	GS	record
OBN	55.115	36.568	1189.6	153.0						GS	bulletin
ANN	44.800	37.433	1384.5	175.2			309.7			GS	bulletin
GRS	39.500	46.330	1423.6	181.2						GS	bulletin
VAN	37.948	58.108	1535.1	191.7						GS	bulletin
ASH	37.950	58.350	1539.6	194.2						GS	bulletin
TAB	38.068	46.327	1573.7	200.2						ISC	bulletin
SIM	44.949	34.116	1588.6	204.2			355.2			GS	bulletin
TAS	41.340	69.310	1651.5	208.2						GS	bulletin
SAM	39.660	66.950	1673.2	211.2						GS	bulletin
PUL	59.773	30.324	1712.3	212.2						GS	bulletin
MHI	36.308	59.472	1740.1	218.3			384.2			ISC	bulletin
IR2	35.663	50.898	1752.2	219.5						ISC	bulletin
KIS	46.998	28.818	1839.7	229.2						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	02:59:59.81	51.358	53.319

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DSH	38.570	68.760	1861.8	233.7						GS	bulletin
FRU	42.830	74.620	1862.6	233.2						GS	bulletin
ANR	40.750	72.370	1876.0	236.4						GS	bulletin
SEM	50.400	80.250	1886.2	235.0						GS	bulletin
IAS	47.193	27.562	1918.0		242.7					ISC	bulletin
PPE	46.217	27.617	1959.9		248.2					ISC	bulletin
CLI	46.550	27.283	1966.8	245.2						ISC	bulletin
KUL	37.900	69.780	1974.0	247.1						GS	bulletin
CFR	45.185	28.153	1976.3	246.2						ISC	bulletin
AAA	43.267	76.950	1986.2	248.1						GS	bulletin
TLG&	43.238	77.225	2006.3	250.0	257.9			460.6	571.9	CSE	record
AAB	43.230	77.230	2007.1	250.0						GS	bulletin
TLB	44.589	28.033	2017.7	250.2						ISC	bulletin
BRD	45.517	27.050	2034.4	254.2						ISC	bulletin
NUR	60.509	24.651	2036.3	249.2						ISC	bulletin
VRI	45.870	26.725	2038.7	253.2						ISC	bulletin
SUF	62.719	26.151	2051.6	251.8						ISC	bulletin
KJF	64.199	27.715	2062.0	252.4						ISC	bulletin
LVV	49.819	24.031	2065.5	253.2						GS	bulletin
CYP	51.293	23.300	2076.2	254.8						ISC	bulletin
CVO	45.822	26.174	2079.2	257.2						ISC	bulletin
ISR	45.138	26.545	2089.3		260.2					ISC	bulletin
KHO	37.480	71.530	2102.9		262.2					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	02:59:59.81	51.358	53.319

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
APA	67.558	33.442	2105.5	258.6						GS	bulletin
MLR	45.492	25.944	2112.0		261.7					ISC	bulletin
ISK	41.066	29.059	2176.1		268.0					ISC	bulletin
CGN	44.167	26.000	2180.6		270.2					ISC	bulletin
CMP	45.268	25.038	2186.2		276.2					ISC	bulletin
KSH	39.517	75.923	2187.0		272.2					ISC	bulletin
DMK	41.822	27.757	2208.7		271.4					ISC	bulletin
CTT	41.147	28.430	2211.0		273.0					ISC	bulletin
UZH	48.631	22.293	2226.3		273.2					GS	bulletin
DEV	45.883	22.903	2303.0		282.2					ISC	bulletin
SOD	67.371	26.629	2303.9		279.5					ISC	bulletin
EDC	40.347	27.863	2304.6		281.7					ISC	bulletin
DST	39.606	28.628	2310.2		281.2					ISC	bulletin
NIE	49.419	20.313	2335.2		285.6					ISC	bulletin
GZR	45.393	22.777	2336.4		285.2					ISC	bulletin
KRA	50.058	19.940	2339.9		283.3					ISC	bulletin
CLO	45.074	22.802	2351.2		287.2					ISC	bulletin
JOS	48.496	20.539	2353.0		284.2					ISC	bulletin
UME	63.815	20.237	2372.4		286.3					ISC	bulletin
UPP	59.858	17.627	2402.0		288.7					ISC	bulletin
BZS	45.617	21.617	2405.6		291.7					ISC	bulletin
PSZ	47.919	19.894	2420.6		292.9					ISC	bulletin
CSS	34.962	33.331	2422.2		292.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	02:59:59.81	51.358	53.319

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SSR	44.863	21.743	2435.7		294.4					ISC	bulletin
EZN	39.826	26.325	2441.7		295.3					ISC	bulletin
CEP	33.824	71.909	2456.0		296.2					ISC	bulletin
ELL	36.748	29.908	2458.2		296.5					ISC	bulletin
RAC	50.083	18.194	2458.7		296.9					ISC	bulletin
HRI	33.270	35.740	2460.1		297.2					ISC	bulletin
KEV	69.755	27.007	2463.2		296.0					ISC	bulletin
BUD	47.484	19.024	2499.3		300.2					ISC	bulletin
CPA	32.981	71.424	2512.5		302.5					ISC	bulletin
BEO	44.821	20.455	2527.3		303.2					ISC	bulletin
CHCP	33.658	73.264	2539.2		304.2					ISC	bulletin
THW	32.794	71.743	2545.4		304.5					ISC	bulletin
KIR	67.840	20.417	2553.3		304.0					ISC	bulletin
KSP	50.843	16.293	2564.4		305.7					ISC	bulletin
DRP	31.744	70.203	2576.7		308.2					ISC	bulletin
VAY	41.321	22.570	2588.8		308.2					ISC	bulletin
ZST	48.196	17.103	2602.8		310.2					ISC	bulletin
QUE	30.188	66.950	2603.8		311.2					ISC	bulletin
SKO	41.972	21.439	2624.2		311.7					ISC	bulletin
JER	31.772	35.197	2629.4		312.2					ISC	bulletin
VIE	48.248	16.362	2651.9		315.2					ISC	bulletin
VKA	48.265	16.318	2654.2		315.2					ISC	bulletin
SOP	47.683	16.558	2661.8		315.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	02:59:59.81	51.358	53.319

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VSK	39.111	23.693	2665.2		315.0					ISC	bulletin
SARP	31.921	72.672	2673.0		312.5					ISC	bulletin
VNE	39.312	23.232	2681.3		316.8					ISC	bulletin
WMQ	43.821	87.695	2686.8		317.6					ISC	bulletin
BCI	42.367	20.067	2694.0		319.0					ISC	bulletin
VGL	39.446	22.884	2694.9		317.8					ISC	bulletin
VMA	38.706	23.588	2701.4		318.6					ISC	bulletin
TRO	69.632	18.928	2705.8		318.2					ISC	bulletin
NRI	69.430	88.083	2706.9		319.2					GS	bulletin
NRI	69.430	88.083	2706.9		319.2					GS	record
PRU	49.988	14.542	2711.2		319.5					ISC	bulletin
COP	55.683	12.433	2711.3		318.4					ISC	bulletin
VSI	38.879	23.209	2713.7		319.5					ISC	bulletin
PRA	50.070	14.433	2715.7		320.2					ISC	bulletin
BRL	52.472	13.291	2719.7		320.2					ISC	bulletin
BRG	50.873	13.943	2722.3		319.7					ISC	bulletin
PUK	42.043	19.893	2725.8		321.2					ISC	bulletin
VFI	39.235	22.592	2729.1		320.4					ISC	bulletin
SDA	42.052	19.499	2752.3		322.8					ISC	bulletin
VTH	38.201	23.360	2753.3		322.5					ISC	bulletin
KBN	40.624	20.788	2755.4		321.8					ISC	bulletin
NB2	61.040	11.215	2765.7		322.1					ISC	bulletin
TIR	41.348	19.865	2771.3		324.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	02:59:59.81	51.358	53.319

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CLL	51.308	13.002	2771.9		323.3					ISC	bulletin
VAG	38.316	22.900	2774.9		323.8					ISC	bulletin
PRNI	30.345	34.997	2777.4		325.2					ISC	bulletin
VPA	38.782	22.340	2778.1		325.3					ISC	bulletin
BERA	40.703	19.949	2807.1		326.7					ISC	bulletin
KHC	49.131	13.578	2808.3		327.4					ISC	bulletin
MOA	47.849	14.266	2813.2		327.9					ISC	bulletin
TPE	40.295	20.011	2829.9		329.7					ISC	bulletin
KONO	59.649	9.598	2850.8		329.7					ISC	bulletin
WET	49.144	12.878	2855.7		330.7					ISC	bulletin
LJU	46.043	14.533	2877.3		332.5					ISC	bulletin
HOF	50.314	11.877	2880.3		333.1					ISC	bulletin
MOX	50.665	11.616	2885.8		333.2					ISC	bulletin
MUD	56.460	9.170	2901.8		334.5					ISC	bulletin
KBA	47.078	13.345	2910.9		335.2					ISC	bulletin
BHG	47.721	12.879	2914.3		336.4					ISC	bulletin
RBL	46.442	13.568	2925.1		336.2					ISC	bulletin
TRI	45.709	13.764	2947.3		338.2					ISC	bulletin
GRF	49.692	11.222	2947.4		339.2					ISC	bulletin
LCI	40.334	18.112	2956.7		338.9					ISC	bulletin
BRT	40.878	17.204	2983.9		341.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:04:59.71	51.371	53.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	657.7	88.0		104.5	152.5		180.5	GS	record
SVE	56.827	60.637	771.2	102.3						GS	bulletin
SVE	56.827	60.637	771.2	102.3		127.5	183.3		221.3	GS	record
DBC	43.020	46.830	1049.1	135.8			239.3			GS	record
BUY	42.810	47.130	1060.0	138.3			245.3		300.3	GS	record
PYA	44.033	43.058	1119.6	143.3			254.3			GS	bulletin
MOS	55.738	37.625	1145.0	145.3						GS	bulletin
AKT	41.480	47.730	1178.7	152.7			273.3		328.3	GS	record
OBN	55.115	36.568	1190.1	153.1		192.8	274.3		338.3	GS	record
OBN	55.115	36.568	1190.1	153.3						GS	bulletin
ANN	44.800	37.433	1386.2	175.8			310.3			GS	bulletin
GRS	39.500	46.330	1425.4	182.3						GS	bulletin
ASH	37.950	58.350	1540.7	195.3						GS	bulletin
TAB	38.068	46.327	1575.5	201.3						ISC	bulletin
SIM	44.949	34.116	1590.2	203.3						GS	bulletin
TAS	41.340	69.310	1651.3	208.6						GS	bulletin
SAM	39.660	66.950	1673.3	211.3						GS	bulletin
MHI	36.308	59.472	1741.0	218.3			388.3			ISC	bulletin
IR2	35.663	50.898	1753.8	220.3						ISC	bulletin
DSH	38.570	68.760	1861.9	234.3						GS	bulletin
FRU	42.830	74.620	1861.9	234.7			410.5			GS	bulletin
ANR	40.750	72.370	1875.7	236.5						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:04:59.71	51.371	53.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SEM	50.400	80.250	1884.8	234.6						GS	bulletin
IAS	47.193	27.562	1919.4	239.3						ISC	bulletin
KHI	34.143	58.642	1958.5	244.4						ISC	bulletin
PPE	46.217	27.617	1961.3	246.8						ISC	bulletin
CLI	46.550	27.283	1968.2	245.3						ISC	bulletin
KUL	37.900	69.780	1974.1	246.2						GS	bulletin
CFR	45.185	28.153	1977.8	246.3						ISC	bulletin
AAA	43.267	76.950	1985.4	246.5						GS	bulletin
TLG&	43.238	77.225	2005.5	250.1	257.9			460.9	571.9	CSE	record
AAB	43.230	77.230	2006.4	250.6						GS	bulletin
TLB	44.589	28.033	2019.2	250.3						ISC	bulletin
BRD	45.517	27.050	2035.9	254.3						ISC	bulletin
NUR	60.509	24.651	2036.3	251.2						ISC	bulletin
VRI	45.870	26.725	2040.1	253.8						ISC	bulletin
SUF	62.719	26.151	2051.3	252.3						ISC	bulletin
KJF	64.199	27.715	2061.5	253.6						ISC	bulletin
CYP	51.293	23.300	2077.1	257.3						ISC	bulletin
CVO	45.822	26.174	2080.6	257.3						ISC	bulletin
ISR	45.138	26.545	2090.7	260.3						ISC	bulletin
KHO	37.480	71.530	2102.8	261.3						GS	bulletin
MLR	45.492	25.944	2113.5		263.3					ISC	bulletin
ISK	41.066	29.059	2177.8		268.1					ISC	bulletin
CGN	44.167	26.000	2182.1		270.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:04:59.71	51.371	53.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KSH	39.517	75.923	2186.5		272.3					ISC	bulletin
CMP	45.268	25.038	2187.6		276.3					ISC	bulletin
DMK	41.822	27.757	2210.4		272.5					ISC	bulletin
CTT	41.147	28.430	2212.7		272.6					ISC	bulletin
KCT	40.266	28.357	2280.5		266.6					ISC	bulletin
SOD	67.371	26.629	2303.3		280.3					ISC	bulletin
DEV	45.883	22.903	2304.3		282.3					ISC	bulletin
EDC	40.347	27.863	2306.3		281.8					ISC	bulletin
DST	39.606	28.628	2312.0		282.3					ISC	bulletin
NIE	49.419	20.313	2336.3		285.7					ISC	bulletin
KRA	50.058	19.940	2340.9		283.5					ISC	bulletin
SPC	49.189	20.245	2349.0		286.6					ISC	bulletin
CLO	45.074	22.802	2352.6		287.3					ISC	bulletin
JOS	48.496	20.539	2354.1		284.3					ISC	bulletin
UME	63.815	20.237	2372.2		286.0					ISC	bulletin
UPP	59.858	17.627	2402.1		288.6					ISC	bulletin
BZS	45.617	21.617	2407.0		292.3					ISC	bulletin
PSZ	47.919	19.894	2421.7		293.0					ISC	bulletin
CSS	34.962	33.331	2424.0		292.8					ISC	bulletin
SSR	44.863	21.743	2437.1		294.8					ISC	bulletin
EZN	39.826	26.325	2443.4		295.4					ISC	bulletin
CEP	33.824	71.909	2456.2		296.4					ISC	bulletin
RAC	50.083	18.194	2459.7		296.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:04:59.71	51.371	53.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ELL	36.748	29.908	2460.1		296.6					ISC	bulletin
HRI	33.270	35.740	2462.0		297.8					ISC	bulletin
KEV	69.755	27.007	2462.4		296.1					ISC	bulletin
IZM	38.398	27.263	2489.7		297.3					ISC	bulletin
BUD	47.484	19.024	2500.5		300.3					ISC	bulletin
CPA	32.981	71.424	2512.7		302.6					ISC	bulletin
BEO	44.821	20.455	2528.7		303.3					ISC	bulletin
CHCP	33.658	73.264	2539.3		304.4					ISC	bulletin
THW	32.794	71.743	2545.6		304.5					ISC	bulletin
KIR	67.840	20.417	2552.7		303.6					ISC	bulletin
KSP	50.843	16.293	2565.3		306.0					ISC	bulletin
DRP	31.744	70.203	2577.1		308.6					ISC	bulletin
ZST	48.196	17.103	2603.9		309.3					ISC	bulletin
JER	31.772	35.197	2631.4		312.8					ISC	bulletin
VIE	48.248	16.362	2652.9		315.3					ISC	bulletin
VKA	48.265	16.318	2655.2		315.5					ISC	bulletin
VSK	39.111	23.693	2666.9		315.6					ISC	bulletin
SARP	31.921	72.672	2673.1		315.1					ISC	bulletin
VNE	39.312	23.232	2682.9		317.5					ISC	bulletin
WMQ	43.821	87.695	2685.6		318.1					ISC	bulletin
VGL	39.446	22.884	2696.5		318.1					ISC	bulletin
VMA	38.706	23.588	2703.1		318.7					ISC	bulletin
NRI	69.430	88.083	2705.0		318.5			579.3		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:04:59.71	51.371	53.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	2705.0		318.7					GS	bulletin
TRO	69.632	18.928	2705.1		317.7					ISC	bulletin
COP	55.683	12.433	2711.7		318.8					ISC	bulletin
PRU	49.988	14.542	2712.1		319.3					ISC	bulletin
VSI	38.879	23.209	2715.4		319.9					ISC	bulletin
PRA	50.070	14.433	2716.6		320.3					ISC	bulletin
BRL	52.472	13.291	2720.4		320.3					ISC	bulletin
BRG	50.873	13.943	2723.1		319.8					ISC	bulletin
VFI	39.235	22.592	2730.7		320.8					ISC	bulletin
VTH	38.201	23.360	2755.0		322.7					ISC	bulletin
NB2	61.040	11.215	2765.7		322.2					ISC	bulletin
CLL	51.308	13.002	2772.7		323.3					ISC	bulletin
VAG	38.316	22.900	2776.6		324.2					ISC	bulletin
PRNI	30.345	34.997	2779.3		325.3					ISC	bulletin
VPA	38.782	22.340	2779.8		325.9					ISC	bulletin
KHC	49.131	13.578	2809.3		327.5					ISC	bulletin
MOA	47.849	14.266	2814.2		328.0					ISC	bulletin
KONO	59.649	9.598	2851.0		329.6					ISC	bulletin
WET	49.144	12.878	2856.6		331.1					ISC	bulletin
LJU	46.043	14.533	2878.5		332.6					ISC	bulletin
HOF	50.314	11.877	2881.2		333.2					ISC	bulletin
MOX	50.665	11.616	2886.6		333.3					ISC	bulletin
MUD	56.460	9.170	2902.2		334.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:04:59.71	51.371	53.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KBA	47.078	13.345	2912.0		335.3					ISC	bulletin
BHG	47.721	12.879	2915.4		337.2					ISC	bulletin
RBL	46.442	13.568	2926.2		336.3					ISC	bulletin
GRF	49.692	11.222	2948.3		339.3					ISC	bulletin
TRI	45.709	13.764	2948.4		337.8					ISC	bulletin
LCI	40.334	18.112	2958.2		339.1					ISC	bulletin
BRT	40.878	17.204	2985.3		341.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:09:59.85	51.391	53.351

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	655.2	87.4		104.9	155.4		184.4	GS	record
SVE	56.827	60.637	768.8	102.4						GS	bulletin
SVE	56.827	60.637	768.8	102.8		127.2	183.2		220.2	GS	record
DBC	43.020	46.830	1051.5	136.2			237.7			GS	record
BUY	42.810	47.130	1062.4	137.7			245.2		299.2	GS	record
PYA	44.033	43.058	1121.9	143.2			254.2			GS	bulletin
MOS	55.738	37.625	1144.6	146.2						GS	bulletin
AKT	41.480	47.730	1181.2	153.2			273.2		330.2	GS	record
OBN	55.115	36.568	1189.9	143.2						GS	bulletin
OBN	55.115	36.568	1189.9	152.7		193.9	274.0		336.2	GS	record
ANN	44.800	37.433	1388.1	175.5						GS	bulletin
GRS	39.500	46.330	1427.9	181.4						GS	bulletin
VAN	37.948	58.108	1538.0	192.5						GS	bulletin
TAB	38.068	46.327	1578.0	200.2						ISC	bulletin
SIM	44.949	34.116	1591.9	204.2						GS	bulletin
TAS	41.340	69.310	1651.8	208.5						GS	bulletin
SAM	39.660	66.950	1674.2	211.4						GS	bulletin
MHI	36.308	59.472	1742.8	219.2			386.2			ISC	bulletin
IR2	35.663	50.898	1756.1	220.0						ISC	bulletin
FRU	42.830	74.620	1861.9	233.2			411.2			GS	bulletin
ANR	40.750	72.370	1876.0	236.4						GS	bulletin
SEM	50.400	80.250	1883.5	234.1						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:09:59.85	51.391	53.351

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
IAS	47.193	27.562	1920.5	243.2						ISC	bulletin
KHI	34.143	58.642	1960.4	244.3						ISC	bulletin
PPE	46.217	27.617	1962.5	246.7						ISC	bulletin
CLI	46.550	27.283	1969.4	247.2						ISC	bulletin
KUL	37.900	69.780	1974.9	247.0						GS	bulletin
CFR	45.185	28.153	1979.2	245.7						ISC	bulletin
AAA	43.267	76.950	1985.2	248.3						GS	bulletin
TLG&	43.238	77.225	2005.3	250.0	258.0			460.5	571.7	CSE	record
AAB	43.230	77.230	2006.1	250.3						GS	bulletin
TLB	44.589	28.033	2020.6	250.2						ISC	bulletin
NUR	60.509	24.651	2035.6	250.4						ISC	bulletin
BRD	45.517	27.050	2037.2	254.2						ISC	bulletin
VRI	45.870	26.725	2041.4	255.2						ISC	bulletin
NRN	41.430	76.000	2048.3	254.7						GS	bulletin
SUF	62.719	26.151	2050.3	253.2						ISC	bulletin
KJF	64.199	27.715	2060.3	253.1						ISC	bulletin
CVO	45.822	26.174	2081.9	257.2						ISC	bulletin
ISR	45.138	26.545	2092.0	260.2						ISC	bulletin
KHO	37.480	71.530	2103.5	261.9						GS	bulletin
MLR	45.492	25.944	2114.7	262.2						ISC	bulletin
ISK	41.066	29.059	2179.5	268.0						ISC	bulletin
CGN	44.167	26.000	2183.5	270.2						ISC	bulletin
DMK	41.822	27.757	2212.0	272.4						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:09:59.85	51.391	53.351

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UZH	48.631	22.293	2228.2	274.2						GS	bulletin
SOD	67.371	26.629	2301.8	279.8						ISC	bulletin
DEV	45.883	22.903	2305.4		282.7					ISC	bulletin
EDC	40.347	27.863	2308.0		281.2					ISC	bulletin
DST	39.606	28.628	2313.8		281.2					ISC	bulletin
NIE	49.419	20.313	2336.9		285.7					ISC	bulletin
GZR	45.393	22.777	2338.9		285.2					ISC	bulletin
KRA	50.058	19.940	2341.5		283.8					ISC	bulletin
SPC	49.189	20.245	2349.7		286.7					ISC	bulletin
CLO	45.074	22.802	2353.7		287.2					ISC	bulletin
JOS	48.496	20.539	2354.9		284.2					ISC	bulletin
UME	63.815	20.237	2371.2		286.3					ISC	bulletin
UPP	59.858	17.627	2401.6		288.7					ISC	bulletin
BZS	45.617	21.617	2408.0		292.2					ISC	bulletin
PSZ	47.919	19.894	2422.6		293.0					ISC	bulletin
CSS	34.962	33.331	2426.2		292.2					ISC	bulletin
SSR	44.863	21.743	2438.2		294.7					ISC	bulletin
EZN	39.826	26.325	2445.1		295.3					ISC	bulletin
CEP	33.824	71.909	2457.1		296.2					ISC	bulletin
RAC	50.083	18.194	2460.3		297.2					ISC	bulletin
KEV	69.755	27.007	2460.8		295.6					ISC	bulletin
ELL	36.748	29.908	2462.1		297.0					ISC	bulletin
HRI	33.270	35.740	2464.3		297.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:09:59.85	51.391	53.351

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
IZM	38.398	27.263	2491.5		297.2					ISC	bulletin
BUD	47.484	19.024	2501.3		300.2					ISC	bulletin
CPA	32.981	71.424	2513.7		301.9					ISC	bulletin
BEO	44.821	20.455	2529.8		303.2					ISC	bulletin
CHCP	33.658	73.264	2540.1		304.3					ISC	bulletin
THW	32.794	71.743	2546.5		304.6					ISC	bulletin
KIR	67.840	20.417	2551.3		304.0					ISC	bulletin
KSP	50.843	16.293	2565.7		305.9					ISC	bulletin
DRP	31.744	70.203	2578.2		308.5					ISC	bulletin
VAY	41.321	22.570	2591.8		308.6					ISC	bulletin
ZST	48.196	17.103	2604.6		310.3					ISC	bulletin
QUE	30.188	66.950	2605.8		309.9					ISC	bulletin
SKO	41.972	21.439	2627.1		311.7					ISC	bulletin
JER	31.772	35.197	2633.7		312.2					ISC	bulletin
VIE	48.248	16.362	2653.6		315.5					ISC	bulletin
VKA	48.265	16.318	2655.9		315.5					ISC	bulletin
SOP	47.683	16.558	2663.6		316.0					ISC	bulletin
VSK	39.111	23.693	2668.5		316.0					ISC	bulletin
SARP	31.921	72.672	2674.1		316.4					ISC	bulletin
VNE	39.312	23.232	2684.5		317.5					ISC	bulletin
WMQ	43.821	87.695	2684.8		318.2					ISC	bulletin
VGL	39.446	22.884	2698.1		317.9					ISC	bulletin
NRI	69.430	88.083	2702.6		318.7					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:09:59.85	51.391	53.351

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	2702.6		318.7					GS	record
TRO	69.632	18.928	2703.7		317.5					ISC	bulletin
VMA	38.706	23.588	2704.7		318.4					ISC	bulletin
COP	55.683	12.433	2711.6		318.7					ISC	bulletin
PRU	49.988	14.542	2712.6		319.5					ISC	bulletin
VSI	38.879	23.209	2717.0		319.8					ISC	bulletin
PRA	50.070	14.433	2717.1		320.2					ISC	bulletin
BRL	52.472	13.291	2720.6		328.2					ISC	bulletin
BRG	50.873	13.943	2723.5		319.7					ISC	bulletin
VFI	39.235	22.592	2732.3		320.7					ISC	bulletin
VTH	38.201	23.360	2756.7		322.6					ISC	bulletin
NB2	61.040	11.215	2765.1		322.3					ISC	bulletin
CLL	51.308	13.002	2773.0		323.5					ISC	bulletin
VAG	38.316	22.900	2778.2		324.1					ISC	bulletin
VPA	38.782	22.340	2781.4		326.2					ISC	bulletin
PRNI	30.345	34.997	2781.7		325.2					ISC	bulletin
UER	51.563	94.087	2791.1		326.3					GS	bulletin
KHC	49.131	13.578	2809.8		327.4					ISC	bulletin
MOA	47.849	14.266	2814.9		328.2					ISC	bulletin
KONO	59.649	9.598	2850.5		329.7					ISC	bulletin
WET	49.144	12.878	2857.1		331.0					ISC	bulletin
LJU	46.043	14.533	2879.3		332.5					ISC	bulletin
HOF	50.314	11.877	2881.6		333.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/21/84	03:09:59.85	51.391	53.351

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MOX	50.665	11.616	2887.0		333.2					ISC	bulletin
MUD	56.460	9.170	2902.0		334.6					ISC	bulletin
KBA	47.078	13.345	2912.7		335.7					ISC	bulletin
BHG	47.721	12.879	2916.0		337.2					ISC	bulletin
RBL	46.442	13.568	2927.0		336.2					ISC	bulletin
GRF	49.692	11.222	2948.7		339.3					ISC	bulletin
TRI	45.709	13.764	2949.3		338.2					ISC	bulletin
LCI	40.334	18.112	2959.6		338.9					ISC	bulletin
BRT	40.878	17.204	2986.6		341.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/11/84	19:00:00.20	65.05	55.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
HARP&	66.820	65.790	524.3	71.4		83.9	125.1		143.6	CSE	record
SVE	56.827	60.637	963.0	124.2						GS	bulletin
SVE	56.827	60.637	963.0	124.8		154.8	222.8		269.8	GS	record
ARU	56.416	58.570	979.8	124.8		159.8	219.1		271.6	GS	record
APA	67.558	33.442	1005.2	130.2						GS	bulletin
SEVR&	55.200	60.150	1131.5	143.7			255.6		311.9	CSE	record
SOD	67.371	26.629	1295.6	163.6			289.8			ISC	bulletin
KEV	69.755	27.007	1299.4	164.8				292.3		ISC	bulletin
KJF	64.199	27.715	1303.0	165.8				291.3		ISC	bulletin
PUL	59.773	30.324	1396.9	176.2						GS	bulletin
PUL	59.773	30.324	1396.9	176.8			308.8		393.8	GS	record
MOS	55.738	37.625	1406.1	177.8						GS	bulletin
SUF	62.719	26.151	1432.4	180.7						ISC	bulletin
NRI	69.430	88.083	1484.3	187.8				351.8		GS	record
OBN	55.115	36.568	1501.3	188.4						GS	bulletin
OBN	55.115	36.568	1501.3	188.4		239.6	331.8		428.8	GS	record
KIR	67.840	20.417	1556.3	194.7						ISC	bulletin
NUR	60.509	24.651	1616.0	200.6			352.3			ISC	bulletin
UME	63.815	20.237	1663.5	206.7						ISC	bulletin
TDO&	50.092	40.508	1869.3	230.5	240.5		405.9	426.5	528.5	CSE	record
MIK	54.500	27.833	1904.6	233.8				433.8		GS	bulletin
NVS	54.850	83.266	1914.3	235.8				441.8		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/11/84	19:00:00.20	65.05	55.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UPP	59.858	17.627	1984.9	243.4			432.8			ISC	bulletin
KBS	78.918	11.924	2053.6	253.1						ISC	bulletin
APP	60.539	13.928	2118.5	259.7						ISC	bulletin
SLL	60.476	13.320	2150.7	263.9						ISC	bulletin
HFS	60.134	13.696	2153.2	263.8						ISC	bulletin
ELT	53.253	86.277	2177.9	267.2						GS	bulletin
ELT	53.253	86.277	2177.9	267.3						GS	record
SEM	50.400	80.250	2184.8	267.0						GS	bulletin
NB2	61.040	11.215	2216.6	260.0						ISC	bulletin
ZEL&	50.740	28.198	2221.2	269.7	275.5					CSE	record
USK	50.937	84.773	2315.6		280.6					GS	bulletin
KONO	59.649	9.598	2374.7		287.7					ISC	bulletin
PYA	44.033	43.058	2454.3		294.8					GS	bulletin
LVV	49.819	24.031	2474.4		297.5					GS	bulletin
GRO	43.320	45.750	2486.6		298.8					GS	bulletin
ANN	44.800	37.433	2500.9		301.2					GS	bulletin
DBC	43.020	46.830	2504.5		296.8					GS	record
COP	55.683	12.433	2512.3		301.5					ISC	bulletin
BUY	42.810	47.130	2523.7		302.3					GS	record
BER	60.383	5.334	2527.7		303.1					ISC	bulletin
SOC	43.583	39.720	2572.5		305.8					GS	bulletin
SIM	44.949	34.116	2579.9		308.8					GS	bulletin
IAS	47.193	27.562	2580.4		306.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/11/84	19:00:00.20	65.05	55.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MUD	56.460	9.170	2609.2		310.6					ISC	bulletin
KRA	50.058	19.940	2627.2		311.1					ISC	bulletin
DOC	46.907	26.550	2646.3		312.8					ISC	bulletin
CLI	46.550	27.283	2653.0		313.3					ISC	bulletin
UZH	48.631	22.293	2655.0		314.0					GS	bulletin
AKT	41.480	47.730	2662.6		315.8					GS	record
CEA	46.976	25.951	2662.7		315.3					ISC	bulletin
NIE	49.419	20.313	2667.7		315.8					ISC	bulletin
BIR	46.266	27.626	2667.8		317.8					ISC	bulletin
UER	51.563	94.087	2668.0		316.3					GS	record
PPE	46.217	27.617	2673.0		315.3					ISC	bulletin
TI2	41.730	44.750	2675.0		313.6					GS	bulletin
HNM	47.278	24.734	2681.6		316.8					ISC	bulletin
SPC	49.189	20.245	2691.2		315.8					ISC	bulletin
BKR	41.733	43.517	2694.9		318.8					GS	bulletin
RAC	50.083	18.194	2701.5		320.0					ISC	bulletin
KSP	50.843	16.293	2720.8		320.3					ISC	bulletin
CEI	47.685	22.459	2735.3		322.8					ISC	bulletin
ODB	45.775	27.056	2736.8		322.8					ISC	bulletin
VRI	45.870	26.725	2739.9		321.8					ISC	bulletin
DAG	76.771	-18.655	2740.8		320.3					ISC	bulletin
JOS	48.496	20.539	2741.2		321.5					ISC	bulletin
CFR	45.185	28.153	2754.6		322.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/11/84	19:00:00.20	65.05	55.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
FRU	42.830	74.620	2756.9		324.0					GS	bulletin
BRD	45.517	27.050	2762.3		324.8					ISC	bulletin
CVO	45.822	26.174	2765.3		323.8					ISC	bulletin
KRV	40.647	46.319	2771.0		321.8					GS	bulletin
TAS	41.340	69.310	2786.9		324.8					GS	bulletin
TLG&	43.238	77.225	2790.3		325.8					CSE	record
AAB	43.230	77.230	2791.2		325.8					GS	bulletin
VLR	46.654	23.355	2795.5		326.8					ISC	bulletin
MLR	45.492	25.944	2806.1		326.8					ISC	bulletin
ISR	45.138	26.545	2818.0		328.8					ISC	bulletin
PSZ	47.919	19.894	2821.1		331.8					ISC	bulletin
BRG	50.873	13.943	2824.9		328.3					ISC	bulletin
CLL	51.308	13.002	2831.6		329.6					ISC	bulletin
LRR	45.440	25.075	2844.1		331.8					ISC	bulletin
CMP	45.268	25.038	2862.2		332.3					ISC	bulletin
PRA	50.070	14.433	2871.1		332.8					ISC	bulletin
PRU	49.988	14.542	2873.2		333.3					ISC	bulletin
DEV	45.883	22.903	2886.7		332.8					ISC	bulletin
GRS	39.500	46.330	2896.6		335.2					GS	bulletin
PSN	43.682	28.184	2902.7		335.8					ISC	bulletin
PRZ	42.480	78.400	2904.4		335.8					GS	bulletin
BUC	44.414	26.097	2905.6		335.8					ISC	bulletin
ZST	48.196	17.103	2916.7		337.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/11/84	19:00:00.20	65.05	55.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ANR	40.750	72.370	2918.2		336.2					GS	bulletin
TIK	71.630	128.870	2919.9		335.8					GS	bulletin
SAM	39.660	66.950	2924.6		335.9					GS	bulletin
CGN	44.167	26.000	2933.5		336.8					ISC	bulletin
GZR	45.393	22.777	2938.5		338.8					ISC	bulletin
NRN	41.430	76.000	2941.5		337.7					GS	bulletin
VKA	48.265	16.318	2945.0		339.6					ISC	bulletin
MOX	50.665	11.616	2949.4		339.3					ISC	bulletin
BZS	45.617	21.617	2963.8		339.8					ISC	bulletin
HOF	50.314	11.877	2967.0		340.6					ISC	bulletin
CLO	45.074	22.802	2968.1		340.8					ISC	bulletin
MOY	51.670	101.000	2977.9		341.6					GS	bulletin
SOP	47.683	16.558	2986.6		343.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/27/84	06:00:00.05	67.75 (?)	33.00 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
APA	67.558	33.442	28.5			4.2				GS	bulletin
SOD	67.371	26.629	274.6	43.8						ISC	bulletin
KEV	69.755	27.007	329.7	51.1						ISC	bulletin
KJF	64.199	27.715	462.7	66.8						ISC	bulletin
TRO	69.632	18.928	606.7	83.7			143.9			ISC	bulletin
SUF	62.719	26.151	645.0	88.9						ISC	bulletin
PUL	59.773	30.324	898.6	122.4			208.4			GS	bulletin
PUL	59.773	30.324	898.6	122.9			209.9		248.9	GS	record
NUR	60.509	24.651	901.9	120.0			209.9			ISC	bulletin
UPP	59.858	17.627	1154.3	149.9			263.8			ISC	bulletin
APP	60.539	13.928	1218.9	157.3						ISC	bulletin
SLL	60.476	13.320	1246.1	160.2						ISC	bulletin
HFS	60.134	13.696	1261.6	162.7						ISC	bulletin
NB2	61.040	11.215	1278.8	164.0						ISC	bulletin
TBY	60.079	12.830	1297.3	166.8						ISC	bulletin
KBS	78.918	11.924	1398.4	176.4						ISC	bulletin
HARP&	66.820	65.790	1400.7	172.5			312.7		397.2	CSE	record
OBN	55.115	36.568	1419.8	177.9						GS	bulletin
OBN	55.115	36.568	1419.8	177.9			313.3		405.9	GS	record
KONO	59.649	9.598	1452.5	183.9						ISC	bulletin
BER	60.383	5.334	1560.5	197.8						ISC	bulletin
MUD	56.460	9.170	1747.7	218.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/27/84	06:00:00.05	67.75 (?)	33.00 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	1813.4	221.4						GS	bulletin
ARU	56.416	58.570	1813.4	221.9	234.4		397.9	418.9	507.9	GS	record
SVE	56.827	60.637	1852.9	230.7						GS	bulletin
SVE	56.827	60.637	1852.9	230.9					521.9	GS	record
POD&	50.928	27.675	1895.8	233.8			424.3	436.7	530.2	CSE	record
ZEL&	50.740	28.198	1912.4	233.4			424.0	436.4	532.6	CSE	record
SEVR&	55.200	60.150	1981.1	240.5	249.1		425.6	455.0	551.7	CSE	record
TDO&	50.092	40.508	2009.6	244.2	253.2		434.4	451.6	551.3	CSE	record
KSP	50.843	16.293	2093.4	258.9						ISC	bulletin
CLL	51.308	13.002	2130.2	263.6				470.9		ISC	bulletin
BRG	50.873	13.943	2149.3	264.4				474.9		ISC	bulletin
NIE	49.419	20.313	2160.0	264.9						ISC	bulletin
NRI	69.430	88.083	2176.5	267.9						GS	bulletin
PRU	49.988	14.542	2225.5		277.4					ISC	bulletin
MOX	50.665	11.616	2234.6		275.9					ISC	bulletin
WTS	51.996	6.810	2251.0		278.9					ISC	bulletin
JOS	48.496	20.539	2255.4		278.9					ISC	bulletin
XSO	55.493	-2.251	2264.2		278.7					ISC	bulletin
EKA	55.333	-3.159	2314.2		282.1					ISC	bulletin
ESK	55.317	-3.205	2317.5		283.5					ISC	bulletin
XAL	54.862	-2.215	2317.6		284.1					ISC	bulletin
ECK	55.181	-3.127	2326.1		284.4					ISC	bulletin
KHC	49.131	13.578	2339.2		288.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/27/84	06:00:00.05	67.75 (?)	33.00 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GRF	49.692	11.222	2345.0		290.0					ISC	bulletin
XDE	54.506	-3.490	2399.4		291.8					ISC	bulletin
ENN	50.767	5.923	2400.4		292.4					ISC	bulletin
MEM	50.609	6.007	2413.2		294.1					ISC	bulletin
MOA	47.849	14.266	2456.0		297.9					ISC	bulletin
VRI	45.870	26.725	2462.0		356.9					ISC	bulletin
DOU	50.096	4.594	2510.7		303.4					ISC	bulletin
MLR	45.492	25.944	2510.8		303.9					ISC	bulletin
DMU	53.899	-6.911	2590.0		369.9					ISC	bulletin
DDK	53.387	-6.339	2612.0		372.4					ISC	bulletin
DCN	53.344	-7.277	2653.7		376.0					ISC	bulletin
BSF	47.832	6.792	2665.3		324.5					ISC	bulletin
FLN	48.763	-0.482	2817.6		329.7					ISC	bulletin
LDF	48.594	-0.122	2821.1		330.1					ISC	bulletin
GRR	48.388	-0.858	2867.5		333.9					ISC	bulletin
SMF	46.645	3.841	2878.5		335.9					ISC	bulletin
AVF	46.791	3.353	2879.8		336.7					ISC	bulletin
BKR	41.733	43.517	2962.7		340.9					GS	bulletin
MZF	46.216	2.584	2962.8		340.5					ISC	bulletin
TCF	46.288	2.210	2968.0		340.9					ISC	bulletin
LSF	46.250	1.529	2994.6		342.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/28/84	02:59:59.84	60.30 (?)	57.10 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	437.9	61.5						GS	bulletin
ARU	56.416	58.570	440.9	61.5			107.2			GS	bulletin
OBN	55.115	36.568	1345.3	167.5						GS	bulletin
OBN	55.115	36.568	1345.3	168.2		219.2	298.2		384.2	GS	record
KJF	64.199	27.715	1571.4	197.2			351.2			ISC	bulletin
SUF	62.719	26.151	1652.5	206.7						ISC	bulletin
NVS	54.850	83.266	1664.6	216.2			376.2			GS	record
SOD	67.371	26.629	1670.1	208.2						ISC	bulletin
KEV	69.755	27.007	1737.0	216.2						ISC	bulletin
NUR	60.509	24.651	1770.0	219.3			392.2			ISC	bulletin
ELT	53.253	86.277	1927.2	243.2						GS	record
UME	63.815	20.237	1938.0	241.2						ISC	bulletin
KIR	67.840	20.417	1939.4	241.2						ISC	bulletin
UPP	59.858	17.627	2164.4	266.5						ISC	bulletin
BKR	41.733	43.517	2262.5	279.2						GS	bulletin
TLG&	43.238	77.225	2330.1	282.2						CSE	record
APP	60.539	13.928	2335.1	283.7						ISC	bulletin
HFS	60.134	13.696	2361.8	286.0						ISC	bulletin
SLL	60.476	13.320	2368.9	287.1						ISC	bulletin
NB2	61.040	11.215	2457.7		295.3					ISC	bulletin
UER	51.563	94.087	2465.6		296.5					GS	record
CEA	46.976	25.951	2498.6		300.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/28/84	02:59:59.84	60.30 (?)	57.10 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NIE	49.419	20.313	2606.6		310.2					ISC	bulletin
JOS	48.496	20.539	2663.4		316.2					ISC	bulletin
MHI	36.308	59.472	2670.4		324.4					ISC	bulletin
BRG	50.873	13.943	2852.7		331.4					ISC	bulletin
CLL	51.308	13.002	2875.0		343.2					ISC	bulletin
PRU	49.988	14.542	2881.5		333.7					ISC	bulletin
KHC	49.131	13.578	2996.3		343.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/28/84	03:04:59.90	60.70 (?)	57.50 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ARU	56.416	58.570	481.0	61.0		76.0	119.0		137.0	GS	record
SEVR&	55.200	60.150	631.9	78.8		96.5	138.1		169.2	CSE	record
OBN	55.115	36.568	1379.3	171.1		220.1	302.6		394.1	GS	record
KJF	64.199	27.715	1570.0	197.1			352.1			ISC	bulletin
SUF	62.719	26.151	1656.2	208.6						ISC	bulletin
SOD	67.371	26.629	1658.1	208.4						ISC	bulletin
KEV	69.755	27.007	1717.7	216.1						ISC	bulletin
NUR	60.509	24.651	1780.2	219.5			392.1			ISC	bulletin
ELT	53.253	86.277	1914.8	243.3						GS	record
KIR	67.840	20.417	1927.2	243.1						ISC	bulletin
UME	63.815	20.237	1937.4	242.1						ISC	bulletin
UPP	59.858	17.627	2173.6	267.2						ISC	bulletin
APP	60.539	13.928	2341.2		283.9					ISC	bulletin
TLG&	43.238	77.225	2347.0		222.8					CSE	record
HFS	60.134	13.696	2368.7		286.0					ISC	bulletin
SLL	60.476	13.320	2375.0		287.3					ISC	bulletin
NB2	61.040	11.215	2461.7		295.3					ISC	bulletin
CEA	46.976	25.951	2536.0		300.1					ISC	bulletin
NIE	49.419	20.313	2636.8		310.6					ISC	bulletin
JOS	48.496	20.539	2695.0		315.1					ISC	bulletin
MHI	36.308	59.472	2713.2		324.3					ISC	bulletin
IR2	35.663	50.898	2820.7		326.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/28/84	03:04:59.90	60.70 (?)	57.50 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRG	50.873	13.943	2876.4		330.1					ISC	bulletin
CLL	51.308	13.002	2897.5		344.1					ISC	bulletin
PRU	49.988	14.542	2906.8		334.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:00:00.10	46.90	48.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	441.6	61.9		71.9	110.4		124.9	GS	record
DBC	43.020	46.830	443.0	60.9			107.9			GS	record
PYA	44.033	43.058	509.2	68.9						GS	bulletin
TDO&	50.092	40.508	665.9	88.0		105.1	152.5		178.3	CSE	record
KRV	40.647	46.319	709.3	93.9						GS	bulletin
SOC	43.583	39.720	756.1	100.9						GS	bulletin
ERE	40.170	44.470	803.4	104.9						GS	bulletin
GRS	39.500	46.330	834.2	109.9						GS	bulletin
ANN	44.800	37.433	862.7	113.4			202.4			GS	bulletin
SIM	44.949	34.116	1107.1	142.9						GS	bulletin
OBN	55.115	36.568	1218.9	156.9			276.9		343.9	GS	record
MOS	55.738	37.625	1223.0	156.9						GS	bulletin
SEVR&	55.200	60.150	1244.8	158.7			279.3			CSE	record
IR2	35.663	50.898	1267.0	163.3						ISC	bulletin
ARU	56.416	58.570	1276.9	161.9						GS	bulletin
SVE	56.827	60.637	1394.3	176.2						GS	bulletin
SVE	56.827	60.637	1394.3	176.7			307.9			GS	record
MHI	36.308	59.472	1502.8	191.9						ISC	bulletin
ZEL&	50.740	28.198	1519.4	188.9				350.6	412.5	CSE	record
TLB	44.589	28.033	1580.1	198.9						ISC	bulletin
VRI	45.870	26.725	1645.1	206.4						ISC	bulletin
ISR	45.138	26.545	1677.2	213.9						ISC	bulletin
MLR	45.492	25.944	1713.6	215.4						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:00:00.10	46.90	48.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SAM	39.660	66.950	1716.6		222.9					GS	bulletin
JMB	42.467	26.583	1770.8	221.9						ISC	bulletin
CMP	45.268	25.038	1788.2		229.9					ISC	bulletin
TAS	41.340	69.310	1793.9	224.5						GS	bulletin
PVL	43.217	25.333	1834.0	231.9						ISC	bulletin
HRI	33.270	35.740	1839.1		236.9					ISC	bulletin
COZ	45.321	24.343	1839.7		234.9					ISC	bulletin
DSH	38.570	68.760	1913.9		241.9					GS	bulletin
DEV	45.883	22.903	1934.6		245.9					ISC	bulletin
UZH	48.631	22.293	1936.5	240.4						GS	bulletin
JER	31.772	35.197	2007.9		254.4					ISC	bulletin
VTS	42.592	23.208	2020.7		253.4					ISC	bulletin
MMB	41.589	23.728	2026.1		253.9					ISC	bulletin
KUL	37.900	69.780	2029.7	250.8						GS	bulletin
SSR	44.863	21.743	2050.3	255.9						ISC	bulletin
JOS	48.496	20.539	2066.6	255.6						ISC	bulletin
NIE	49.419	20.313	2075.7	256.9						ISC	bulletin
KRA	50.058	19.940	2100.0	257.9						ISC	bulletin
PSZ	47.919	19.894	2121.4	262.0						ISC	bulletin
FRU	42.830	74.620	2127.0		264.9					GS	bulletin
RMN	30.497	34.627	2157.5		268.4					ISC	bulletin
KHO	37.480	71.530	2181.6		270.9					GS	bulletin
SKO	41.972	21.439	2181.7		270.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:00:00.10	46.90	48.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BUD	47.484	19.024	2193.0		271.9					ISC	bulletin
SUF	62.719	26.151	2233.7	273.9						ISC	bulletin
OHR	41.111	20.799	2269.9		278.9					ISC	bulletin
ZST	48.196	17.103	2323.3		284.6					ISC	bulletin
TIR	41.348	19.865	2329.5		283.1					ISC	bulletin
KSP	50.843	16.293	2356.4		285.9					ISC	bulletin
SOP	47.683	16.558	2372.2		288.2					ISC	bulletin
SEM	50.400	80.250	2375.7		288.4					GS	bulletin
PRZ	42.480	78.400	2428.9		294.9					GS	bulletin
HARP&	66.820	65.790	2443.6		294.1					CSE	record
APA	67.558	33.442	2449.7		294.7					GS	bulletin
UPP	59.858	17.627	2453.9		294.6					ISC	bulletin
CEP	33.824	71.909	2466.3		296.9					ISC	bulletin
PRU	49.988	14.542	2486.2		298.4					ISC	bulletin
PRA	50.070	14.433	2493.2		299.9					ISC	bulletin
LCI	40.334	18.112	2511.4		300.9					ISC	bulletin
DRP	31.744	70.203	2519.2		300.7					ISC	bulletin
BRG	50.873	13.943	2521.4		301.8					ISC	bulletin
THW	32.794	71.743	2534.4		303.7					ISC	bulletin
UME	63.815	20.237	2542.6		301.8					ISC	bulletin
BRT	40.878	17.204	2553.7		304.9					ISC	bulletin
KHC	49.131	13.578	2566.0		306.6					ISC	bulletin
CHCP	33.658	73.264	2570.9		306.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:00:00.10	46.90	48.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CLL	51.308	13.002	2584.5		307.7					ISC	bulletin
SOD	67.371	26.629	2593.3		307.4					ISC	bulletin
KBA	47.078	13.345	2623.0		312.6					ISC	bulletin
TRI	45.709	13.764	2628.2		311.4					ISC	bulletin
HFS	60.134	13.696	2670.4		313.9					ISC	bulletin
FVI	46.593	12.781	2677.0		316.4					ISC	bulletin
MOX	50.665	11.616	2686.8		317.9					ISC	bulletin
SGO	40.558	15.308	2713.1		321.4					ISC	bulletin
DUI	41.658	14.461	2726.2		323.4					ISC	bulletin
GRA1	49.692	11.222	2727.0		321.7					ISC	bulletin
GRF	49.692	11.222	2727.0		321.8					ISC	bulletin
SDI	41.706	13.816	2773.2		324.4					ISC	bulletin
CTI	46.048	11.650	2776.4		324.4					ISC	bulletin
AQU	42.354	13.403	2776.4		324.9					ISC	bulletin
KEV	69.755	27.007	2795.1		325.7					ISC	bulletin
ASS	43.071	12.661	2803.3		327.4					ISC	bulletin
NB2	61.040	11.215	2830.3		327.8					ISC	bulletin
CRE	43.628	11.952	2835.4		331.9					ISC	bulletin
NAO	60.824	10.832	2843.4		327.8					ISC	bulletin
MUD	56.460	9.170	2849.1		331.1					ISC	bulletin
OSS	46.687	10.144	2870.1		331.4					ISC	bulletin
SAL	45.607	10.526	2873.7		327.9					ISC	bulletin
KONO	59.649	9.598	2877.9		332.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:00:00.10	46.90	48.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SAX	47.251	9.345	2913.8		335.4					ISC	bulletin
VDL	46.486	9.470	2925.7		336.4					ISC	bulletin
LLS	46.849	9.009	2949.4		337.9					ISC	bulletin
BUH	48.676	8.228	2960.7		339.7					ISC	bulletin
SLE	47.766	8.493	2962.9		338.9					ISC	bulletin
TMA	46.106	8.873	2981.3		339.4					ISC	bulletin
TRO	69.632	18.928	2992.7		341.3					ISC	bulletin
GWF	48.978	7.622	2997.8		343.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:05:00.00	46.95	48.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
DLM	43.070	46.630	445.9	61.5		73.0	110.0		125.0	GS	record
PYA	44.033	43.058	509.6	68.0						GS	bulletin
TDO&	50.092	40.508	659.6	87.9		104.8	153.1			CSE	record
KRV	40.647	46.319	713.9	94.0						GS	bulletin
SOC	43.583	39.720	755.2	99.5						GS	bulletin
GRS	39.500	46.330	838.9	110.6						GS	bulletin
ANN	44.800	37.433	860.2	113.0			203.5			GS	bulletin
SIM	44.949	34.116	1104.0	141.0						GS	bulletin
OBN	55.115	36.568	1212.2	157.0		195.0	278.0		348.0	GS	record
SEVR&	55.200	60.150	1242.8	158.8			279.9			CSE	record
ARU	56.416	58.570	1274.0	162.5						GS	bulletin
VAN	37.948	58.108	1291.3	163.5						GS	bulletin
SVE	56.827	60.637	1391.8	177.0						GS	bulletin
SVE	56.827	60.637	1391.8	177.0			309.0			GS	record
MHI	36.308	59.472	1509.5	192.0						ISC	bulletin
ZEL&	50.740	28.198	1513.7	188.2			332.4		412.1	CSE	record
TLB	44.589	28.033	1576.5	198.0						ISC	bulletin
VRI	45.870	26.725	1641.0	210.0						ISC	bulletin
ISR	45.138	26.545	1673.3	211.0						ISC	bulletin
MLR	45.492	25.944	1709.5	215.5						ISC	bulletin
SAM	39.660	66.950	1722.2	219.5						GS	bulletin
JMB	42.467	26.583	1767.9	222.0						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:05:00.00	46.95	48.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TAS	41.340	69.310	1798.8	231.6						GS	bulletin
COZ	45.321	24.343	1835.6		236.5					ISC	bulletin
HRI	33.270	35.740	1841.0		237.0					ISC	bulletin
KDZ	41.650	25.417	1893.4		242.0					ISC	bulletin
DSH	38.570	68.760	1919.5		244.5					GS	bulletin
JER	31.772	35.197	2009.9		254.0					ISC	bulletin
VTS	42.592	23.208	2017.4		253.0					ISC	bulletin
KUL	37.900	69.780	2035.3		255.7					GS	bulletin
SSR	44.863	21.743	2046.2	254.0						ISC	bulletin
JOS	48.496	20.539	2061.5	255.0						ISC	bulletin
NIE	49.419	20.313	2070.4	256.5						ISC	bulletin
KRA	50.058	19.940	2094.5	257.2						ISC	bulletin
PSZ	47.919	19.894	2116.5	262.1						ISC	bulletin
NUR	60.509	24.651	2138.0	265.0						ISC	bulletin
RMN	30.497	34.627	2159.6	267.0						ISC	bulletin
KHO	37.480	71.530	2187.1	267.4						GS	bulletin
SUF	62.719	26.151	2227.0	274.0						ISC	bulletin
OHR	41.111	20.799	2266.8		278.0					ISC	bulletin
KJF	64.199	27.715	2287.1		280.0					ISC	bulletin
KSP	50.843	16.293	2350.8		285.5					ISC	bulletin
TPE	40.295	20.011	2366.8		284.5					ISC	bulletin
SEM	50.400	80.250	2377.2		288.9					GS	bulletin
PRZ	42.480	78.400	2432.8		295.0					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:05:00.00	46.95	48.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
APA	67.558	33.442	2443.4		294.5					GS	bulletin
UPP	59.858	17.627	2447.3		294.7					ISC	bulletin
PRU	49.988	14.542	2480.7		298.1					ISC	bulletin
PRA	50.070	14.433	2487.7		300.0					ISC	bulletin
LCI	40.334	18.112	2508.2		301.0					ISC	bulletin
BRG	50.873	13.943	2515.8		301.9					ISC	bulletin
DRP	31.744	70.203	2525.5		300.8					ISC	bulletin
UME	63.815	20.237	2535.9		302.5					ISC	bulletin
THW	32.794	71.743	2540.5		303.9					ISC	bulletin
BRT	40.878	17.204	2550.2		304.5					ISC	bulletin
KHC	49.131	13.578	2560.7		306.5					ISC	bulletin
CHCP	33.658	73.264	2576.7		307.0					ISC	bulletin
CLL	51.308	13.002	2578.8		307.0					ISC	bulletin
SOD	67.371	26.629	2586.7		308.1					ISC	bulletin
TRI	45.709	13.764	2623.6		311.6					ISC	bulletin
HFS	60.134	13.696	2663.8		314.0					ISC	bulletin
FVI	46.593	12.781	2672.1		315.6					ISC	bulletin
MOX	50.665	11.616	2681.1		318.0					ISC	bulletin
SGO	40.558	15.308	2709.6		321.0					ISC	bulletin
GRA1	49.692	11.222	2721.5		321.3					ISC	bulletin
GRF	49.692	11.222	2721.5		321.4					ISC	bulletin
DUI	41.658	14.461	2722.4		322.0					ISC	bulletin
SDI	41.706	13.816	2769.3		323.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/27/84	06:05:00.00	46.95	48.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CTI	46.048	11.650	2771.6		324.0					ISC	bulletin
AQU	42.354	13.403	2772.4		324.5					ISC	bulletin
KEV	69.755	27.007	2788.7		325.0					ISC	bulletin
PO9	42.574	12.942	2798.1		327.5					ISC	bulletin
ASS	43.071	12.661	2799.1		327.0					ISC	bulletin
NB2	61.040	11.215	2823.6		328.1					ISC	bulletin
CRE	43.628	11.952	2831.0		332.0					ISC	bulletin
NAO	60.824	10.832	2836.7		328.1					ISC	bulletin
OSS	46.687	10.144	2865.1		330.5					ISC	bulletin
SAL	45.607	10.526	2868.9		333.0					ISC	bulletin
KONO	59.649	9.598	2871.3		331.9					ISC	bulletin
SAX	47.251	9.345	2908.6		335.0					ISC	bulletin
VDL	46.486	9.470	2920.7		335.0					ISC	bulletin
LLS	46.849	9.009	2944.3		337.0					ISC	bulletin
BUH	48.676	8.228	2955.4		340.0					ISC	bulletin
SLE	47.766	8.493	2957.7		339.0					ISC	bulletin
ZUL	47.481	8.390	2972.5		340.0					ISC	bulletin
TMA	46.106	8.873	2976.3		339.0					ISC	bulletin
TRO	69.632	18.928	2986.1		341.4					ISC	bulletin
WTS	51.996	6.810	2999.8		343.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/18/85	21:15:00.29	65.994	41.038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
APA	67.558	33.442	376.8	52.9						GS	bulletin
SOD	67.371	26.629	653.3	85.9						ISC	bulletin
KJF	64.199	27.715	655.9	87.5			153.7			ISC	bulletin
KEV	69.755	27.007	721.3	95.3			166.7			ISC	bulletin
SUF	62.719	26.151	803.7	105.1						ISC	bulletin
PUL	59.773	30.324	879.4	114.7			199.7			GS	bulletin
PUL	59.773	30.324	879.4	114.7			199.7		243.7	GS	record
KIR	67.840	20.417	921.1	117.7						ISC	bulletin
UME	63.815	20.237	1009.1	128.4			229.7			ISC	bulletin
NUR	60.509	24.651	1020.2	129.6						ISC	bulletin
HARP&	66.820	65.790	1102.4	140.8			244.1		301.6	CSE	record
MOS	55.738	37.625	1156.9	146.7						GS	bulletin
OBN	55.115	36.568	1235.5	154.7			275.7			GS	bulletin
OBN	55.115	36.568	1235.5	154.7		200.7	269.7		348.7	GS	record
UPP	59.858	17.627	1359.8	170.5			301.1			ISC	bulletin
ARU	56.416	58.570	1413.6	181.1						GS	bulletin
ARU	56.416	58.570	1413.6	181.1			318.7		397.7	GS	record
SVE	56.827	60.637	1450.5	182.9						GS	bulletin
SVE	56.827	60.637	1450.5	183.1			321.7		395.7	GS	record
MIK	54.500	27.833	1467.4	182.7						GS	bulletin
HFS	60.134	13.696	1512.4	188.3						ISC	bulletin
NB2	61.040	11.215	1565.4	194.7						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/18/85	21:15:00.29	65.994	41.038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SEVR&	55.200	60.150	1581.1	196.1			343.3		435.5	CSE	record
KHE	80.620	58.050	1704.6	208.7			379.7			GS	bulletin
POD&	50.928	27.675	1840.6	223.7			401.9	415.1	506.1	CSE	record
ZEL&	50.740	28.198	1848.5	224.4			400.5	415.5	510.9	CSE	record
COP	55.683	12.433	1905.4	237.8			422.7			ISC	bulletin
NRI	69.430	88.083	1976.0	246.7						GS	bulletin
MUD	56.460	9.170	1981.5	241.7						ISC	bulletin
LVV	49.819	24.031	2048.0	253.7						GS	bulletin
KRA	50.058	19.940	2144.9	256.2						ISC	bulletin
KSP	50.843	16.293	2191.5	264.7						ISC	bulletin
NIE	49.419	20.313	2197.0	265.7						ISC	bulletin
UZH	48.631	22.293	2218.2	268.5						GS	bulletin
KIS	46.998	28.818	2234.4	268.7						GS	bulletin
CLL	51.308	13.002	2269.6	274.0				489.7		ISC	bulletin
BRG	50.873	13.943	2274.6	275.6						ISC	bulletin
JOS	48.496	20.539	2283.3	276.6				506.7		ISC	bulletin
DAG	76.771	-18.655	2296.7	279.2						ISC	bulletin
CLI	46.550	27.283	2313.1		280.2					ISC	bulletin
PRA	50.070	14.433	2332.6		282.7					ISC	bulletin
PRU	49.988	14.542	2336.5		283.0					ISC	bulletin
PSZ	47.919	19.894	2361.3		286.5					ISC	bulletin
ANN	44.800	37.433	2368.1		286.3					GS	bulletin
SIM	44.949	34.116	2378.6		286.7					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/18/85	21:15:00.29	65.994	41.038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MOX	50.665	11.616	2382.8		287.2					ISC	bulletin
WIT	52.813	6.670	2391.4		288.7					ISC	bulletin
VRI	45.870	26.725	2397.5		289.2					ISC	bulletin
HOF	50.314	11.877	2405.4		289.1					ISC	bulletin
CVO	45.822	26.174	2414.5		291.2					ISC	bulletin
SRO	47.813	18.313	2421.2		291.7					ISC	bulletin
ZST	48.196	17.103	2422.2		291.4					ISC	bulletin
MSR	46.038	24.821	2422.6		289.7					ISC	bulletin
VKA	48.265	16.318	2441.7		293.7					ISC	bulletin
CFR	45.185	28.153	2442.1		293.0					ISC	bulletin
PYA	44.033	43.058	2446.2		293.1					GS	bulletin
KHC	49.131	13.578	2453.9		295.2					ISC	bulletin
MLR	45.492	25.944	2454.8		295.2					ISC	bulletin
WTS	51.996	6.810	2456.9		294.7					ISC	bulletin
WET	49.144	12.878	2478.4		297.4					ISC	bulletin
ISR	45.138	26.545	2479.6		297.2					ISC	bulletin
DEV	45.883	22.903	2486.5		301.7					ISC	bulletin
GRF	49.692	11.222	2488.9		298.0					ISC	bulletin
SOP	47.683	16.558	2491.3		298.1					ISC	bulletin
SOC	43.583	39.720	2494.4		298.7					GS	bulletin
CMP	45.268	25.038	2499.0		301.7					ISC	bulletin
TLB	44.589	28.033	2508.6		299.7					ISC	bulletin
COZ	45.321	24.343	2509.8		299.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/18/85	21:15:00.29	65.994	41.038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
EDU	56.548	-3.014	2518.6		300.2					ISC	bulletin
GZR	45.393	22.777	2541.1		303.7					ISC	bulletin
ESY	55.918	-2.614	2548.3		303.3					ISC	bulletin
BZS	45.617	21.617	2548.5		303.2					ISC	bulletin
TNS	50.222	8.447	2549.0		304.6					ISC	bulletin
MOA	47.849	14.266	2553.6		303.7					ISC	bulletin
ELO	56.471	-3.712	2556.0		304.8					ISC	bulletin
EBH	56.248	-3.508	2563.6		305.3					ISC	bulletin
DLM	43.070	46.630	2573.1		306.0					GS	record
EDI	55.923	-3.186	2573.8		305.7					ISC	bulletin
EBL	55.773	-3.044	2578.9		307.3					ISC	bulletin
DBC	43.020	46.830	2580.3		306.2					GS	record
EAU	55.845	-3.447	2591.6		307.2					ISC	bulletin
ENN	50.767	5.923	2603.1		308.7					ISC	bulletin
PSN	43.682	28.184	2603.6		310.7					ISC	bulletin
EAB	56.188	-4.340	2605.9		308.4					ISC	bulletin
UNZR	42.720	46.780	2613.0		308.2					GS	record
MEM	50.609	6.007	2613.8		308.9					ISC	bulletin
EKA	55.333	-3.159	2618.2		309.4					ISC	bulletin
ESK	55.317	-3.205	2621.6		311.2					ISC	bulletin
SSR	44.863	21.743	2623.6		310.9					ISC	bulletin
FUR	48.163	11.275	2632.1		312.4					ISC	bulletin
KBA	47.078	13.345	2661.8		313.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/18/85	21:15:00.29	65.994	41.038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BEO	44.821	20.455	2663.2		314.8					ISC	bulletin
UCC	50.798	4.359	2666.0		314.7					ISC	bulletin
WLF	49.665	6.153	2693.4		317.2					ISC	bulletin
SNF	50.509	4.283	2695.0		317.1					ISC	bulletin
BKR	41.733	43.517	2702.7		319.6					GS	bulletin
PVL	43.217	25.333	2710.9		317.7					ISC	bulletin
RBL	46.442	13.568	2716.6		320.2					ISC	bulletin
DOU	50.096	4.594	2718.9		318.5					ISC	bulletin
LJU	46.043	14.533	2722.9		320.1					ISC	bulletin
VOY	46.032	13.894	2745.9		321.9					ISC	bulletin
AKT	41.480	47.730	2758.2		322.7					GS	record
CDF	48.412	7.276	2763.6		322.7					ISC	bulletin
JMB	42.467	26.583	2765.3		323.7					ISC	bulletin
OGA	46.868	11.025	2766.4		323.9					ISC	bulletin
KAS	41.372	33.767	2775.9		324.5					ISC	bulletin
SLE	47.766	8.493	2776.4		323.8					ISC	bulletin
TRI	45.709	13.764	2782.5		324.7					ISC	bulletin
SAX	47.251	9.345	2792.7		325.9					ISC	bulletin
ZUL	47.481	8.390	2807.5		326.3					ISC	bulletin
SEM	50.400	80.250	2809.3		326.1					GS	bulletin
OSS	46.687	10.144	2816.7		327.7					ISC	bulletin
CTI	46.048	11.650	2823.6		327.7					ISC	bulletin
VTS	42.592	23.208	2826.0		331.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/18/85	21:15:00.29	65.994	41.038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ELT	53.253	86.277	2831.9		330.1					GS	bulletin
BSF	47.832	6.792	2837.3		328.4					ISC	bulletin
KRV	40.647	46.319	2838.3		327.7					GS	bulletin
HAU	48.006	6.348	2838.8		328.6					ISC	bulletin
PLD	42.105	24.703	2843.5		330.7					ISC	bulletin
LLS	46.849	9.009	2844.1		329.6					ISC	bulletin
VDL	46.486	9.470	2861.5		332.1					ISC	bulletin
CTT	41.147	28.430	2873.8		332.7					ISC	bulletin
KDZ	41.650	25.417	2877.0		332.7					ISC	bulletin
ERE	40.170	44.470	2879.8		333.7					GS	bulletin
HRT	40.822	29.668	2889.0		333.5					ISC	bulletin
MMB	41.589	23.728	2920.5		335.7					ISC	bulletin
TMA	46.106	8.873	2920.8		335.9					ISC	bulletin
YLV	40.567	29.373	2921.4		335.7					ISC	bulletin
DLE	53.287	-6.544	2934.8		336.5					ISC	bulletin
SKO	41.972	21.439	2935.2		340.7					ISC	bulletin
VAI	45.867	8.771	2947.9		339.2					ISC	bulletin
USK	50.937	84.773	2959.9		337.7					GS	bulletin
DCN	53.344	-7.277	2963.3		338.2					ISC	bulletin
GRS	39.500	46.330	2965.0		340.1					GS	bulletin
BNT	40.356	27.920	2968.5		339.7					ISC	bulletin
EDC	40.347	27.863	2970.4		340.2					ISC	bulletin
VAY	41.321	22.570	2976.2		339.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/18/85	21:15:00.29	65.994	41.038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SDA	42.052	19.499	2978.3		340.2					ISC	bulletin
ALE	82.503	-62.350	2981.2		340.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/19/87	04:00:00.01	60.60 (?)	57.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	464.7	60.0		68.5	105.0		120.0	GS	record
ARU	56.416	58.570	472.6	61.0		77.0	119.0		131.0	GS	record
OBN	55.115	36.568	1360.3			221.5	303.5		395.0	GS	record
ZHD&	57.100	33.600	1407.8	171.0						CSE	record
KJF	64.199	27.715	1560.6	197.0			351.0			ISC	bulletin
SUF	62.719	26.151	1645.0	206.8			369.0			ISC	bulletin
SOD	67.371	26.629	1652.6	208.4						ISC	bulletin
KEV	69.755	27.007	1715.3	217.0						ISC	bulletin
NUR	60.509	24.651	1767.0	219.5			386.0			ISC	bulletin
UME	63.815	20.237	1927.7	241.3						ISC	bulletin
ELT	53.253	86.277	1928.4	243.5						GS	record
TRO	69.632	18.928	2012.2	254.5						ISC	bulletin
UPP	59.858	17.627	2160.6	266.6						ISC	bulletin
MOR6	66.237	14.767	2162.4	266.6						ISC	bulletin
NSS	64.530	11.967	2314.2		283.8					ISC	bulletin
CYP	51.293	23.300	2321.7		284.0					ISC	bulletin
HFS	60.134	13.696	2356.5		285.9					ISC	bulletin
NRA0	60.735	11.541	2445.0		293.8					ISC	bulletin
NB2	61.040	11.215	2450.4		295.2					ISC	bulletin
UER	51.563	94.087	2464.2		296.7					GS	record
MOL	62.570	7.548	2580.0		309.8					ISC	bulletin
NIE	49.419	20.313	2618.5		311.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/19/87	04:00:00.01	60.60 (?)	57.20 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRG	50.873	13.943	2859.6		332.4					ISC	bulletin
CLL	51.308	13.002	2880.9		333.0					ISC	bulletin
PRU	49.988	14.542	2889.6		334.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/19/87	04:04:59.98	60.80 (?)	57.50 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	477.9	60.0			104.0		119.0	GS	record
ARU	56.416	58.570	492.0	60.5		76.0	120.5		132.5	GS	record
OBN	55.115	36.568	1382.7			224.0	304.0		395.0	GS	record
ZHD&	57.100	33.600	1426.4	172.0						CSE	record
KJF	64.199	27.715	1565.0	198.0			351.0			ISC	bulletin
SOD	67.371	26.629	1651.0	210.3						ISC	bulletin
SUF	62.719	26.151	1652.1	208.6			367.0			ISC	bulletin
NRI	69.430	88.083	1700.4		221.6					GS	record
KEV	69.755	27.007	1709.4	215.0						ISC	bulletin
NUR	60.509	24.651	1777.6	219.0			386.0			ISC	bulletin
ELT	53.253	86.277	1917.3	243.2						GS	record
UME	63.815	20.237	1932.4	244.4						ISC	bulletin
POD&	50.928	27.675	2138.2	259.3						CSE	record
UPP	59.858	17.627	2170.7	266.7						ISC	bulletin
TLG&	43.238	77.225	2355.1	283.2						CSE	record
HFS	60.134	13.696	2365.3		286.0					ISC	bulletin
UER	51.563	94.087	2451.0		296.4					GS	record
NRA0	60.735	11.541	2452.7		294.1					ISC	bulletin
NB2	61.040	11.215	2457.6		295.2					ISC	bulletin
KRA	50.058	19.940	2611.5		307.0					ISC	bulletin
NIE	49.419	20.313	2639.1		311.0					ISC	bulletin
BRG	50.873	13.943	2877.0		332.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/19/87	04:04:59.98	60.80 (?)	57.50 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CLL	51.308	13.002	2897.7		333.0					ISC	bulletin
PRU	49.988	14.542	2907.8		334.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/87	15:15:00.03	47.60	56.20

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MAK	42.961	47.505	853.2	113.0						GS	bulletin
BUY	42.810	47.130	887.5	119.0		143.0	207.0		250.0	GS	record
DLM	43.070	46.630	901.4	119.0		148.0	212.0		241.0	GS	record
KAT	39.028	56.270	951.1	126.0						GS	bulletin
ARU	56.416	58.570	993.4	128.0						GS	bulletin
ARU	56.416	58.570	993.4	128.0		160.0	225.0			GS	record
SVE	56.827	60.637	1069.1	138.5			243.0			GS	bulletin
SVE	56.827	60.637	1069.1	138.8		173.0	243.0		298.0	GS	record
VAN	37.948	58.108	1082.0	138.6						GS	bulletin
PYA	44.033	43.058	1092.7	140.0						GS	bulletin
KRV	40.647	46.319	1102.6	143.0						GS	bulletin
TI2	41.730	44.750	1114.8	144.8						GS	bulletin
BKR	41.733	43.517	1194.9	155.0						GS	bulletin
GRS	39.500	46.330	1199.0	155.0						GS	bulletin
SAM	39.660	66.950	1233.5	157.6						GS	bulletin
ERE	40.170	44.470	1249.0	162.4						GS	bulletin
TAS	41.340	69.310	1249.7	160.0						GS	bulletin
MHI	36.308	59.472	1281.1	164.0						ISC	bulletin
IR2	35.663	50.898	1394.7	178.0						ISC	bulletin
IR7	35.703	50.609	1398.1	179.0						ISC	bulletin
IR1	35.416	50.689	1426.3	182.5						ISC	bulletin
DSH	38.570	68.760	1427.3	183.0						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/87	15:15:00.03	47.60	56.20

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
IR4	35.239	50.901	1439.6	180.0						ISC	bulletin
GAR	39.000	70.320	1485.8	189.4						GS	bulletin
KHI	34.143	58.642	1506.1	191.6						ISC	bulletin
FRU	42.830	74.620	1534.6	194.5			345.3			GS	bulletin
KUL	37.900	69.780	1542.0	196.1			349.8			GS	bulletin
OBN	55.115	36.568	1593.3	200.0						GS	bulletin
OBN	55.115	36.568	1593.3	200.0		253.5	349.0		452.0	GS	record
KHO	37.480	71.530	1680.2	213.1						GS	bulletin
TLG&	43.238	77.225	1707.5	216.1					496.4	CSE	record
AAB	43.230	77.230	1708.2	216.0						GS	bulletin
KVT	41.081	36.046	1754.0	221.0						ISC	bulletin
MUR	38.370	73.930	1763.6	224.8				402.0		GS	bulletin
KSH	39.517	75.923	1819.4	231.0						ISC	bulletin
PRZ	42.480	78.400	1829.8	230.0				416.0		GS	bulletin
BHD	33.274	44.386	1872.7		241.5					ISC	bulletin
KAS	41.372	33.767	1903.3		242.0					ISC	bulletin
NVS	54.850	83.266	2037.5	253.0			453.4			GS	bulletin
NVS	54.850	83.266	2037.5	253.0			453.0		570.0	GS	record
KIS	46.998	28.818	2059.1	255.0			464.0			GS	bulletin
BBTK	39.842	32.760	2062.9	259.0						ISC	bulletin
RTB	33.029	40.308	2096.1		263.0					ISC	bulletin
USK	50.937	84.773	2096.7	258.0						GS	bulletin
IAS	47.193	27.562	2147.9		267.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/87	15:15:00.03	47.60	56.20

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PUL	59.773	30.324	2155.8	263.0			480.0			GS	bulletin
CFR	45.185	28.153	2159.5		268.0					ISC	bulletin
BIR	46.266	27.626	2166.3		269.5					ISC	bulletin
PPE	46.217	27.617	2168.4	266.5						ISC	bulletin
CLI	46.550	27.283	2184.3	269.4						ISC	bulletin
TLB	44.589	28.033	2188.9	270.5						ISC	bulletin
ELT	53.253	86.277	2207.4	269.8			491.0			GS	bulletin
PSN	43.682	28.184	2212.0	274.0						ISC	bulletin
DOC	46.907	26.550	2229.7	273.0						ISC	bulletin
BRD	45.517	27.050	2231.5		276.5					ISC	bulletin
HRT	40.822	29.668	2234.3		275.0					ISC	bulletin
VRI	45.870	26.725	2245.0		278.5					ISC	bulletin
ISK	41.066	29.059	2266.7		278.0					ISC	bulletin
ISR	45.138	26.545	2281.6		281.0					ISC	bulletin
ALT	39.055	30.110	2301.8		281.5					ISC	bulletin
CTT	41.147	28.430	2309.3		282.0					ISC	bulletin
MLR	45.492	25.944	2315.1		284.0					ISC	bulletin
CSS	34.962	33.331	2356.8		290.0					ISC	bulletin
LRR	45.440	25.075	2381.7		291.5					ISC	bulletin
CMP	45.268	25.038	2390.1		290.5					ISC	bulletin
CYP	51.293	23.300	2397.8		291.1					ISC	bulletin
BBU	26.215	50.457	2422.1		294.0					ISC	bulletin
COZ	45.321	24.343	2440.4		295.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/87	15:15:00.03	47.60	56.20

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BEE	26.017	50.522	2442.5		296.3					ISC	bulletin
BJA	25.992	50.608	2443.7		295.9					ISC	bulletin
PVL	43.217	25.333	2445.2		300.0					ISC	bulletin
ELL	36.748	29.908	2463.6		299.1					ISC	bulletin
WMQ	43.821	87.695	2467.8		297.0					ISC	bulletin
NUR	60.509	24.651	2476.7		296.9					ISC	bulletin
UZH	48.631	22.293	2504.0		300.0					GS	bulletin
SUF	62.719	26.151	2506.9		299.5					ISC	bulletin
KDZ	41.650	25.417	2509.5		301.0					ISC	bulletin
KJF	64.199	27.715	2524.1		301.5					ISC	bulletin
CLO	45.074	22.802	2563.8		306.5					ISC	bulletin
APA	67.558	33.442	2571.2		301.0					GS	bulletin
NIE	49.419	20.313	2631.7		313.0					ISC	bulletin
BZS	45.617	21.617	2633.8		311.0					ISC	bulletin
MMB	41.589	23.728	2639.1		315.0					ISC	bulletin
SPC	49.189	20.245	2640.9		313.6					ISC	bulletin
KRA	50.058	19.940	2647.5		313.4					ISC	bulletin
RYD	24.720	46.610	2672.0		317.5					ISC	bulletin
DDI	30.323	78.056	2673.4		318.0					ISC	bulletin
AYN	28.866	36.001	2708.5		320.7					ISC	bulletin
HQL	29.270	35.047	2725.5		321.7					ISC	bulletin
VAY	41.321	22.570	2739.0		323.0					ISC	bulletin
UER	51.563	94.087	2740.9		322.8					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/03/87	15:15:00.03	47.60	56.20

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SOD	67.371	26.629	2770.4		323.6					ISC	bulletin
NDI	28.683	77.217	2770.6		324.5					ISC	bulletin
SKO	41.972	21.439	2792.9		327.0					ISC	bulletin
SRO	47.813	18.313	2811.8		328.7					ISC	bulletin
UME	63.815	20.237	2827.4		327.9					ISC	bulletin
UPP	59.858	17.627	2830.5		328.0					ISC	bulletin
PTH	29.550	80.217	2870.2		333.4					ISC	bulletin
OHR	41.111	20.799	2882.3		334.5					ISC	bulletin
ZST	48.196	17.103	2889.6		335.2					ISC	bulletin
KSP	50.843	16.293	2890.9		333.9					ISC	bulletin
KEV	69.755	27.007	2929.1		337.0					ISC	bulletin
NRI	69.430	88.083	2986.1		342.4					GS	bulletin
NRI	69.430	88.083	2986.1		342.5					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/88	16:19:59.94	61.361	48.092

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
VSE&	60.500	59.950	649.0	85.8		104.7	151.9		183.9	CSE	record
ARU	56.430	58.563	814.0	108.3						ISC	bulletin
ARU	56.416	58.570	815.5	106.7		131.7	183.4		218.9	GS	record
MOS	55.738	37.625	871.5	113.1						ISC	bulletin
SVE	56.827	60.637	876.1	115.1		142.5	200.6		238.1	GS	record
SVE	56.810	60.637	877.3	115.1						ISC	bulletin
ZHD&	57.100	33.600	950.5	123.4		153.2	208.9		264.7	CSE	record
OBN	55.167	36.600	961.9	124.6			219.1			ISC	bulletin
OBN	55.115	36.568	967.6	125.1		156.1	220.1		276.1	GS	record
APA	67.550	33.333	985.5	127.4			224.9			ISC	bulletin
PUL	59.773	30.324	986.8	127.1		158.1	221.1		278.1	GS	record
PUL	59.767	30.317	987.4	126.1			221.1			ISC	bulletin
KJF	64.199	27.715	1081.8	139.1			246.1			ISC	bulletin
SUF	62.719	26.151	1152.1	148.1			262.1			ISC	bulletin
SOD	67.371	26.629	1224.3	155.4			275.1			ISC	bulletin
NUR	60.509	24.651	1267.2	159.9						ISC	bulletin
KEV	69.755	27.007	1337.6	169.1			298.1			ISC	bulletin
UME	63.815	20.237	1444.7	180.9						ISC	bulletin
KIR	67.840	20.417	1490.9	186.5						ISC	bulletin
UPP	59.858	17.627	1661.1	205.5			364.7			ISC	bulletin
HFS	60.134	13.696	1858.4	227.6						ISC	bulletin
CYP	51.293	23.300	1879.6	230.2						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/88	16:19:59.94	61.361	48.092

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RGS	63.021	10.435	1940.7	240.1						ISC	bulletin
NRA0	60.735	11.541	1949.5	238.7						ISC	bulletin
PYA	44.033	43.058	1955.1	242.1						ISC	bulletin
NB2	61.040	11.215	1956.2	239.9						ISC	bulletin
NRI	69.430	88.083	2015.7	250.9			449.1			GS	record
NRI	69.400	88.100	2016.0	250.6			448.1			ISC	bulletin
BAYA&	50.810	75.515	2046.8	254.1						CSE	record
KRA	50.058	19.940	2142.9	260.1						ISC	bulletin
UZH	48.633	22.300	2148.5	259.8			476.6			ISC	bulletin
DRN	42.030	48.330	2149.0	263.1			467.1			GS	record
KAR1&	49.375	75.400	2157.7	267.1						CSE	record
NIE	49.419	20.313	2176.8	265.4						ISC	bulletin
SPC	49.189	20.245	2199.1	267.5						ISC	bulletin
BKR	41.733	43.517	2203.5	272.1						ISC	bulletin
VRI	45.870	26.725	2206.9	273.1						ISC	bulletin
HYA	61.166	6.187	2209.4	270.8						ISC	bulletin
CFR	45.185	28.153	2217.3	271.1						ISC	bulletin
ODD1	59.912	6.628	2235.8	273.3						ISC	bulletin
BLS1	59.391	6.827	2247.9	273.7						ISC	bulletin
KSP	50.843	16.293	2264.7	274.3						ISC	bulletin
MUD	56.460	9.170	2270.5	274.1						ISC	bulletin
MLR	45.492	25.944	2274.3	279.1						ISC	bulletin
BER	60.383	5.334	2283.2	278.1						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/88	16:19:59.94	61.361	48.092

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SUE	61.057	4.761	2285.9	278.8						ISC	bulletin
ASK	60.483	5.195	2286.2	278.9						ISC	bulletin
KRV	40.650	46.333	2305.1		280.1					ISC	bulletin
KBS	78.918	11.924	2306.0		280.1					ISC	bulletin
PSZ	47.919	19.894	2323.0		282.2					ISC	bulletin
TNR	45.652	24.273	2328.5		284.6					ISC	bulletin
CMP	45.268	25.038	2332.5		284.1					ISC	bulletin
KMY	59.212	5.247	2338.3		284.6					ISC	bulletin
BRG	50.873	13.943	2383.7		287.5					ISC	bulletin
KARS&	49.952	81.075	2394.0		288.4					CSE	record
KVT	41.081	36.046	2396.9		290.1					ISC	bulletin
CLL	51.308	13.002	2400.6		288.7					ISC	bulletin
SRO	47.813	18.313	2408.0		294.5					ISC	bulletin
PRU	49.988	14.542	2420.2		292.0					ISC	bulletin
KAS	41.372	33.767	2422.8		292.6					ISC	bulletin
GRS	39.500	46.333	2432.5		293.1					ISC	bulletin
ZST	48.196	17.103	2435.1		293.7					ISC	bulletin
BZS	45.617	21.617	2447.2		294.3					ISC	bulletin
UKR	50.950	84.750	2509.2		299.6					ISC	bulletin
SSR	44.863	21.743	2510.7		240.1					ISC	bulletin
MOX	50.665	11.616	2520.8		301.1					ISC	bulletin
HOF	50.314	11.877	2533.4		304.2					ISC	bulletin
KHC	49.131	13.578	2536.8		302.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/88	16:19:59.94	61.361	48.092

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BEO	44.821	20.455	2571.7		307.6					ISC	bulletin
MOA	47.849	14.266	2605.1		310.1					ISC	bulletin
CTT	41.147	28.430	2609.1		309.1					ISC	bulletin
BBTK	39.842	32.760	2610.7		312.1					ISC	bulletin
TAS	41.325	69.295	2645.2		313.1					ISC	bulletin
WTS	51.996	6.810	2679.3		315.1					ISC	bulletin
PTJ	45.909	15.973	2684.5		315.6					ISC	bulletin
FRU	42.833	74.617	2708.1		319.1					ISC	bulletin
KBA	47.078	13.345	2715.2		320.3					ISC	bulletin
SAM	39.673	66.990	2734.3		322.1					ISC	bulletin
LJU	46.043	14.533	2743.3		319.4					ISC	bulletin
VBY	45.504	15.257	2754.4		322.6					ISC	bulletin
RBL	46.442	13.568	2757.3		323.4					ISC	bulletin
VOY	46.032	13.894	2775.9		324.4					ISC	bulletin
FVI	46.593	12.781	2784.0		325.1					ISC	bulletin
ABH	49.882	7.548	2793.6		326.8					ISC	bulletin
SKO	41.972	21.439	2795.5		326.6					ISC	bulletin
TRI	45.709	13.764	2809.9		328.6					ISC	bulletin
VAY	41.321	22.570	2811.4		326.8					ISC	bulletin
ENN	50.767	5.923	2814.3		327.1					ISC	bulletin
ANR	40.755	72.360	2816.8		328.1					ISC	bulletin
MEM	50.609	6.007	2821.4		328.4					ISC	bulletin
RUP	49.702	7.060	2832.9		328.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/88	16:19:59.94	61.361	48.092

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
WLF	49.665	6.153	2883.8		334.1					ISC	bulletin
SAX	47.251	9.345	2905.2		335.6					ISC	bulletin
PRZ	42.483	78.400	2907.1		336.1					ISC	bulletin
DSH	38.558	68.775	2907.2		336.1					ISC	bulletin
SLE	47.766	8.493	2908.0		336.1					ISC	bulletin
OSS	46.687	10.144	2910.2		336.4					ISC	bulletin
GAM	39.000	70.317	2915.6		336.4					ISC	bulletin
SNF	50.509	4.283	2920.5		336.9					ISC	bulletin
CDF	48.412	7.276	2920.6		335.8					ISC	bulletin
FEL	47.876	8.013	2924.3		335.9					ISC	bulletin
DOU	50.096	4.594	2934.4		341.4					ISC	bulletin
ZLA	47.482	8.389	2936.1		337.6					ISC	bulletin
LLS	46.849	9.009	2955.3		339.6					ISC	bulletin
VDL	46.486	9.470	2961.3		340.6					ISC	bulletin
EKA	55.333	-3.159	2990.7		351.1					ISC	bulletin
BSF	47.832	6.792	2991.7		341.2					ISC	bulletin

APPENDIX B
ABBREVIATED SEISMIC BULLETINS

APPENDIX B
ABBREVIATED SEISMIC BULLETINS

B1. INTRODUCTION

Appendix II contains abbreviated seismic bulletins (to be used mainly for regional location calibration studies) for three underground nuclear explosions at the Amchitka Island, 23 peaceful nuclear explosions (PNEs) conducted in the former USSR, and 20 underground nuclear explosions at the Semipalatinsk Test Site (STS).

Data on travel (arrival) times was provided by the Geophysical Survey (GS) of the Russian Academy of Sciences (RAS), Complex Seismological Expedition (CSE) of the Joint Institute of Physics of the Earth of the RAS and Russian representative office of the Western Services Corporation (WSC). Appropriate data on travel times from bulletins of the International Seismological Center was also included. Final compilation of seismic bulletins was made at the WSC's representative office in Moscow.

Data on origin times and locations for nuclear explosions at the Amchitka Island is taken from the papers of Springer and Kinnaman, 1971, 1975. Data on origin times and locations for PNEs conducted in the former USSR is taken from the paper of Sultanov et al., 1999. The location for PNE Crystal (2 October 1974) as presented in the paper of Sultanov et al., 1999, is a subject of large (greater than 10 km) error. Due to this fact data on location for this PNE are marked by the sign **(?)**. Data on locations and origin times for nuclear explosions at the STS is taken from the paper of Bocharov *et al.,* 1989.

International codes of seismic stations are used, if available. For stations of the GS RAS and CSE without international codes unique codes were applied. Codes of CSE's stations have the sign **"&"** at the end. Bulletins contain the following station's information: coordinates, distance to source (up to 3000 km), travel times for Pn/P, Pg, Sn/S and Lg phases. The column "Network" contains data on seismological service: GS – Geophysical Survey of the RAS, CSE – Complex Seismological Expedition and ISC - International Seismological Center. The column "Source" contains information on travel times data sources as follows: "record" – measurements on seismic records in this project and "bulletin" – taken from available bulletins.

Content

No.	Date (mm/dd/yy)	Page
1	10/29/65	B-5
2	10/02/69	B-7
3	11/06/71	B-10
4	08/14/74	B-13
5	08/29/74	B-15
6	10/02/74	B-17
7	08/12/75	B-19
8	09/29/75	B-21
9	11/05/76	B-24
10	07/26/77	B-25
11	08/10/77	B-27
12	08/20/77	B-29
13	09/10/77	B-31
14	08/24/78	B-32
15	08/09/78	B-34
16	09/21/78	B-37
17	10/17/78	B-40
18	08/12/79	B-42
19	09/06/79	B-46
20	10/04/79	B-49
21	12/10/80	B-52
22	07/30/82	B-54
23	09/04/82	B-57
24	08/25/84	B-60
25	09/17/84	B-63
26	08/22/88	B-66
27	11/16/64	B-70
28	11/21/65	B-74
29	03/20/66	B-79
30	06/29/66	B-84

No.	Date (mm/dd/yy)	Page
31	10/19/66	B-88
32	02/26/69	B-92
33	10/17/67	B-96
34	06/19/68	B-99
35	09/29/68	B-102
36	03/07/69	B-106
37	11/30/69	B-109
38	06/28/70	B-111
39	01/29/70	B-113
40	04/25/71	B-116
41	06/30/71	B-119
42	12/30/71	B-122
43	02/10/72	B-124
44	06/07/72	B-126
45	11/02/72	B-128
46	12/10/72	B-131

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/29/65	21:00:00.08	51.4381	179.1826

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
AD-	51.875	-176.679	290.2	42.7				78.9		ISC	bulletin
SMY	52.731	174.103	376.3	51.9						ISC	bulletin
NIK	52.974	-168.853	833.9	111.9						ISC	bulletin
SPI	57.160	-170.225	936.2	122.8						ISC	bulletin
BRI	55.204	165.972	972.3	126.6			224.6			GS	record
CBA	55.175	-162.733	1270.0	167.9						ISC	bulletin
BOGR	54.800	160.900	1274.8	164.9			290.4			GS	record
SPN	53.098	160.023	1315.9	170.8						GS	record
KLY	56.313	160.652	1327.8	172.8			308.1			GS	record
KOZ	56.058	159.872	1367.1	179.1	183.3					GS	record
PETR	53.023	158.653	1407.7	179.9			318.5			GS	record
TOP	53.230	158.041	1448.3	186.4			327.4			GS	record
CPR	61.790	-165.955	1462.2	188.5						ISC	bulletin
PAU	51.463	156.806	1548.2	200.3	207.3		351.5			GS	record
PHA	56.988	-158.675	1561.2	202.5						ISC	bulletin
BET	60.808	-161.772	1567.2	201.5						ISC	bulletin
SKR	50.683	156.117	1611.2	206.4						GS	bulletin
SKR	50.683	156.117	1611.2	206.4	214.1		357.9	367.2		GS	record
NOM	64.562	-165.387	1712.0	221.8						ISC	bulletin
ILT	67.870	178.730	1830.0	234.3						GS	record
MAU	48.060	153.250	1894.1	242.9						GS	record
TTL	62.899	-155.976	1948.6	245.9						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/29/65	21:00:00.08	51.4381	179.1826

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SIU	46.850	151.780	2048.3	258.0						GS	record
AMU	61.192	-149.805	2174.2	268.5						ISC	bulletin
KUR	45.230	147.870	2398.9		291.4					GS	record
COL	64.900	-147.793	2407.0		290.2					ISC	bulletin
BRW	71.303	-156.748	2520.0		302.0					ISC	bulletin
USN	64.550	143.180	2526.6		298.9					GS	record
SHO	43.870	146.830	2544.8		303.7					GS	record
YUK	44.030	145.860	2602.9		309.9					GS	record
UGL	49.078	142.066	2629.0		313.2					GS	bulletin
UGL	49.078	142.066	2629.0		313.4					GS	record
YSS	46.967	142.767	2668.7		316.4					GS	record
YSS	46.967	142.767	2668.7		316.4			536.9		GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/02/69	22:06:00.04	51.4171	179.1823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ADK	51.884	-176.684	290.5		42.6					ISC	bulletin
BRI	55.204	165.972	973.4	126.5			235.5		265.5	GS	record
KBG	56.255	162.705	1206.1	155.0			292.5			GS	record
KRI	54.590	161.163	1255.3	161.5		207.0				GS	record
OZRR	54.700	160.400	1305.8	167.5						GS	record
APH	56.000	160.830	1308.9	170.0						GS	record
SPN	53.098	160.023	1316.5	171.0			297.0			GS	record
KLY	56.313	160.652	1329.0	169.5						GS	record
NLC	53.345	159.345	1362.1	179.7			309.5			GS	record
KOZ	56.058	159.872	1368.3	177.5			326.0			GS	record
ABH	53.265	158.738	1402.5	180.0			323.5			GS	record
PET	53.017	158.650	1408.5	180.0			316.0	345.0	401.0	GS	record
PET	53.017	158.650	1408.5	185.0						GS	bulletin
VEK	54.700	158.500	1427.2	183.5			326.2			GS	record
ESOR	55.900	158.700	1435.6	184.0						GS	record
ESO	55.925	158.700	1436.2		180.7					GS	bulletin
TOP	53.230	158.041	1449.0	187.0			327.1			GS	record
PAU	51.463	156.806	1548.6	197.3			351.5			GS	record
SKR	50.683	156.117	1611.4	202.9						GS	bulletin
SKR	50.683	156.117	1611.4	203.0			355.2			GS	record
BIG	59.389	-155.217	1831.3		232.0					ISC	bulletin
ILT	67.870	178.730	1832.4	232.0						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/02/69	22:06:00.04	51.4171	179.1823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ILT	67.870	178.730	1832.4	232.6			405.6	431.6	522.0	GS	record
SVW	61.108	-155.622	1877.9		237.2					ISC	bulletin
MAU	48.060	153.250	1894.0	240.5						GS	record
KDC	57.748	-152.492	1943.5		241.1					ISC	bulletin
MAG	59.554	150.805	1987.5	250.0				467.0		GS	bulletin
SEY	62.917	152.417	2037.8	254.8				457.8		GS	record
SIU	46.850	151.780	2048.1	256.5						GS	record
PMR	61.592	-149.131	2222.7		269.5					ISC	bulletin
SUU	62.781	148.148	2231.5	274.7						GS	record
TNN	65.257	-151.912	2252.0		276.9					ISC	bulletin
SCM	61.833	-147.328	2321.7		281.2					ISC	bulletin
KUR	45.230	147.870	2398.7		291.5					GS	record
KUR	45.230	147.870	2398.7		291.6					GS	bulletin
COL	64.900	-147.793	2408.9		291.4					ISC	bulletin
GIL	64.975	-147.495	2425.1		290.6					ISC	bulletin
MCB	64.723	-147.225	2426.5		290.7					ISC	bulletin
PJD	65.035	-147.508	2427.1		291.5					ISC	bulletin
OKH	53.600	142.945	2443.8		296.5					GS	record
BLR	63.502	-145.845	2445.3		293.8					ISC	bulletin
PAX	62.971	-145.469	2447.1		293.8					ISC	bulletin
BRW	71.303	-156.748	2522.2		299.6					ISC	bulletin
USN	64.550	143.180	2528.4	313.2	301.6			533.8		GS	record
TIV	50.863	142.656	2528.5		303.2			544.6		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/02/69	22:06:00.04	51.4171	179.1823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SHO	43.870	146.830	2544.5		303.6					GS	record
YUK	44.030	145.860	2602.6		309.0					GS	record
UGL	49.078	142.066	2629.4		311.0					GS	record
YSS	46.967	142.767	2668.9		316.0					GS	record
YSS	46.967	142.767	2668.9		316.2			580.0		GS	bulletin
KMU	42.239	142.967	2907.0		333.7					ISC	bulletin
SIT	57.057	-135.324	2971.3		338.4					ISC	bulletin
SAP	43.058	141.332	2971.8		340.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/06/71	22:00:00.06	51.4719	179.1069

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ACA	51.481	179.119	1.3	0.5						ISC	bulletin
ACB	51.463	179.091	1.5	0.5						ISC	bulletin
ASC	51.463	179.158	3.7	1.1						ISC	bulletin
ACC	51.484	179.043	4.6	1.1						ISC	bulletin
AND	51.562	178.953	14.6	3.0						ISC	bulletin
ASB	51.361	179.247	15.8	3.3						ISC	bulletin
ASD	51.391	179.342	18.7	3.7						ISC	bulletin
ANA	51.628	178.656	35.7	6.6						ISC	bulletin
SSI	51.893	179.588	57.4	10.4						ISC	bulletin
RAT	51.799	178.330	64.9	11.4						ISC	bulletin
AMA	51.288	-179.109	125.7	20.5						ISC	bulletin
ADK	51.884	-176.684	294.4	42.6						ISC	bulletin
SMY	52.731	174.103	370.0	50.5						ISC	bulletin
NIK	52.974	-168.853	837.9	111.5						ISC	bulletin
BRI	55.204	165.972	965.8	125.7		150.4	228.7			GS	record
KBG	56.255	162.705	1198.4	153.9			289.9			GS	record
OZRR	54.700	160.400	1298.5	165.4			303.9			GS	record
APH	56.000	160.830	1301.3	168.8			301.3			GS	record
SPN	53.098	160.023	1309.8	167.7	169.4		292.7		377.7	GS	record
SEL	54.100	159.970	1318.5	169.6						GS	record
KOZ	56.058	159.872	1360.7	175.7	179.9		303.7			GS	record
ABH	53.265	158.738	1395.7	178.8			322.9			GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/06/71	22:00:00.06	51.4719	179.1069

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PETR	53.023	158.653	1401.7	178.6			313.1			GS	record
PET	53.017	158.650	1401.9	178.9						GS	bulletin
ESOR	55.900	158.700	1428.1	182.9						GS	record
ESO	55.925	158.700	1428.7		193.4					GS	bulletin
TOP	53.230	158.041	1442.2	183.8			327.8			GS	record
PAU	51.463	156.806	1542.5	197.4						GS	record
SKR	50.683	156.117	1605.6	203.9			357.9	370.4		GS	record
SKR	50.683	156.117	1605.6	206.9						GS	bulletin
ILT	67.870	178.730	1826.2	231.6						GS	bulletin
GMA	65.429	-161.232	1914.0	241.1						ISC	bulletin
KDC	57.748	-152.492	1944.7	240.7						ISC	bulletin
MAG	59.554	150.805	1979.7	245.9			444.4		556.9	GS	record
MAG	59.554	150.805	1979.7	246.4						GS	bulletin
SEY	62.917	152.417	2029.7	253.2						GS	bulletin
SIU	46.850	151.780	2043.3	254.9	261.4		455.4			GS	record
USO	61.133	149.631	2090.6	261.2				472.2		GS	record
PWA	61.651	-149.879	2186.2	266.2						ISC	bulletin
PMS	61.245	-149.561	2189.8	266.4						ISC	bulletin
PMR	61.592	-149.131	2222.4	269.4						ISC	bulletin
SUU	62.781	148.148	2223.5	273.5				502.7	634.9	GS	record
IMA	66.068	-153.679	2227.6	274.3						ISC	bulletin
MID	59.428	-146.339	2324.8		280.7					ISC	bulletin
REI	45.267	148.033	2380.7		290.4			532.4		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/06/71	22:00:00.06	51.4719	179.1069

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TOA	62.105	-146.172	2387.6		288.2					ISC	bulletin
KUR	45.230	147.870	2393.9		291.4					GS	bulletin
KUR	45.230	147.870	2393.9		291.7			536.7		GS	record
COL	64.900	-147.793	2407.4		289.6					ISC	bulletin
GIL	64.975	-147.495	2423.7		292.7					ISC	bulletin
OKH	53.600	142.945	2436.8		294.4					GS	record
OKH	53.600	142.945	2436.8		294.5			544.4		GS	record
BLR	63.502	-145.845	2444.5		293.5					ISC	bulletin
USN	64.550	143.180	2520.3		301.1			542.9		GS	record
TIV	50.863	142.656	2522.0		302.2			548.4		GS	record
YUK	44.030	145.860	2598.0		309.1		569.9			GS	record
UGL	49.078	142.066	2623.3		312.2					GS	bulletin
UGL	49.078	142.066	2623.3		312.2		571.9	566.4		GS	record
NEM	43.328	145.590	2656.7		313.4					ISC	bulletin
YSS	46.967	142.767	2663.2		315.4					GS	bulletin
YSS	46.967	142.767	2663.2		315.4		583.9	570.9		GS	record
MNRR	46.460	141.350	2785.1		326.2					GS	record
KHG	62.650	135.550	2848.1		329.1					GS	record
KMU	42.239	142.967	2902.4		353.0					ISC	bulletin
SAP	43.058	141.332	2966.9		339.9					ISC	bulletin
SIT	57.057	-135.324	2972.8		336.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/14/74	15:00:00.19	68.903	75.823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	489.6	69.8		81.3	121.3		142.3	GS	record
SVE	56.827	60.637	1542.1	192.3	201.3		347.8	373.8	406.8	GS	record
NVS	54.850	83.266	1611.1	197.8		257.8				GS	record
ARU	56.416	58.570	1635.7	202.8	212.3		356.8	371.3		GS	record
CHKA&	53.720	70.650	1712.4	208.9	223.1		378.5	398.1	481.3	CSE	record
BRV&	53.005	70.050	1796.4	220.1	228.2		398.0	418.1	501.2	CSE	record
KOSH&	53.030	69.070	1802.9	220.3	232.1		398.9	419.3	502.6	CSE	record
KKOR&	52.912	69.025	1816.3	222.2	234.4		401.0	421.0	511.0	CSE	record
ELT	53.253	86.277	1826.2	226.7		290.3	406.5			GS	record
MAKI&	52.570	70.617	1839.7	224.8	236.3		405.1	423.1	515.2	CSE	record
KEV	69.755	27.007	1875.2					423.8		ISC	bulletin
KEV	69.755	27.007	1875.2	232.7						ISC	bulletin
SOD	67.371	26.629	1997.3				448.8			ISC	bulletin
SOD	67.371	26.629	1997.3	245.6						ISC	bulletin
KBS	78.918	11.924	2112.1	262.6						ISC	bulletin
KJF	64.199	27.715	2139.4					456.8		ISC	bulletin
KJF	64.199	27.715	2139.4	262.7						ISC	bulletin
UER	51.563	94.087	2160.3	268.0					587.8	GS	record
TRO	69.632	18.928	2169.3	266.5						ISC	bulletin
KIR	67.840	20.417	2205.8	270.7						ISC	bulletin
SHCH&	50.500	60.330	2211.9	272.3						CSE	record
LENS&	50.730	57.900	2239.7	275.5						CSE	record
BUGE&	50.117	59.100	2278.1	279.0						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/14/74	15:00:00.19	68.903	75.823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NOVG&	48.950	59.110	2402.0	290.7						CSE	record
UME	63.815	20.237	2459.1		295.5					ISC	bulletin
NUR	60.509	24.651	2522.5		301.3					ISC	bulletin
UPP	59.858	17.627	2853.3		330.4					ISC	bulletin
TLG&	43.238	77.225	2856.9	332.4						CSE	record
DAG	76.771	-18.655	2859.9		330.1					ISC	bulletin
BKOL&	42.633	79.983	2933.0		339.2					CSE	record
HFS	60.134	13.696	2987.0		341.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/29/74	15:00:00.39	67.085	62.625

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	1076.2	141.1	145.1	177.6	256.1		288.6	GS	record
SVE	56.827	60.637	1147.5	148.1		177.6	260.6		317.6	GS	record
ARU	56.416	58.570	1207.1				263.0		351.6	GS	record
GIR&	62.470	33.687	1453.1	181.2			319.7		417.4	CSE	record
KEV	69.755	27.007	1470.1					317.6		ISC	bulletin
KEV	69.755	27.007	1470.1	184.7						ISC	bulletin
SOD	67.371	26.629	1534.0					327.6		ISC	bulletin
SOD	67.371	26.629	1534.0	191.3						ISC	bulletin
CHKA&	53.720	70.650	1549.8	194.1			349.3	371.6	431.8	CSE	record
KOSH&	53.030	69.070	1603.9	202.1			360.2	382.7	447.7	CSE	record
KJF	64.199	27.715	1616.2					354.6		ISC	bulletin
KJF	64.199	27.715	1616.2	201.7						ISC	bulletin
KKOR&	52.912	69.025	1616.3	204.5			367.9	387.7	466.2	CSE	record
BRV&	53.005	70.050	1619.0	203.9			368.2	388.2	466.5	CSE	record
MAKI&	52.570	70.617	1674.2	210.8			374.7	393.3	476.3	CSE	record
NVS	54.850	83.266	1745.1	215.8						GS	record
KIR	67.840	20.417	1773.0					387.6		ISC	bulletin
KIR	67.840	20.417	1773.0	218.3						ISC	bulletin
PUL	59.773	30.324	1778.8	228.6						GS	record
TRO	69.632	18.928	1781.4	220.1						ISC	bulletin
SHCH&	50.500	60.330	1851.0	231.2	245.1		417.4	429.0	525.3	CSE	record
BUGE&	50.117	59.100	1899.5	236.6	249.9		421.4	435.2	537.9	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/29/74	15:00:00.39	67.085	62.625

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
OBN	55.115	36.568	1910.2	235.6			421.6		544.6	GS	record
UME	63.815	20.237	1958.9	240.9						ISC	bulletin
NUR	60.509	24.651	1971.3					446.1		ISC	bulletin
NUR	60.509	24.651	1971.3	241.6						ISC	bulletin
ELT	53.253	86.277	1998.3	248.3						GS	record
KBS	78.918	11.924	2004.6	245.0						ISC	bulletin
NOVG&	48.950	59.110	2028.7	251.8						CSE	record
UPP	59.858	17.627	2321.6		282.0					ISC	bulletin
HFS	60.134	13.696	2472.7		296.6					ISC	bulletin
NAO	60.824	10.832	2548.5		303.2					ISC	bulletin
KON	59.649	9.598	2684.0		315.7					ISC	bulletin
DAG	76.771	-18.655	2733.1		319.7					ISC	bulletin
TLG&	43.238	77.225	2794.5	327.0						CSE	record
BER	60.383	5.334	2813.9		327.4					ISC	bulletin
COP	55.683	12.433	2863.6		331.9					ISC	bulletin
TORK&	41.933	73.210	2871.1		332.7					CSE	record
AKJ&	41.607	72.253	2894.4		334.5					CSE	record
BKOL&	42.633	79.983	2915.4		334.7					CSE	record
DOMB&	43.337	41.690	2925.1		338.7					CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/02/74	01:00:01.06	66.10 (?)	112.65 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TIK	71.630	128.870	893.0	114.3		140.1	203.4		247.4	GS	record
BOD	57.850	114.183	922.6	120.6		154.9		215.4	264.4	GS	record
YAK	62.016	129.717	945.2	125.9		152.7	219.7			GS	record
BTGS	67.651	134.640	974.1	125.3			218.9	225.4	276.4	GS	record
CAA	56.900	118.270	1066.7	141.8		170.3	250.8		302.3	GS	record
NLT	56.500	115.700	1081.5	139.8		197.3	246.3		310.8	GS	record
NRI	69.430	88.083	1093.3	135.9			240.4		298.9	GS	record
KMO	55.880	111.200	1141.1	149.0		191.9	265.6		327.9	GS	record
KHG	62.650	135.550	1162.5	152.2			266.2			GS	record
NIZ	55.770	109.550	1162.5	152.9			266.9		331.9	GS	record
SKL	55.870	117.380	1167.1	153.6		185.0	267.0	274.0	334.9	GS	record
UKT	55.480	113.620	1184.1	153.6			272.4		338.9	GS	record
CLN	56.870	124.900	1213.1	157.8			273.6	280.6	348.6	GS	record
CGD	58.750	130.620	1229.9	159.3			274.8	280.3		GS	record
TUP	54.430	119.900	1358.1	175.5			306.2	318.0	395.0	GS	record
BDN	53.700	110.110	1388.0	178.5		227.5	308.6	316.3	393.3	GS	record
USN	64.550	143.180	1418.6	182.1				323.2	398.1	GS	record
KROS	54.433	126.971	1513.9	193.9			341.6	348.4	421.9	GS	record
TIG	52.770	106.330	1525.2	193.7			342.4		433.4	GS	record
BMKS	54.711	128.842	1540.8	196.7				353.9	439.9	GS	record
ORL	52.520	99.830	1671.5	214.2		273.7399	371.2	379.7	478.2	GS	record
ARS	51.920	102.430	1679.4	212.4		266.4399		376.9	476.4	GS	record
MOY	51.670	101.000	1734.7	221.4			385.2	391.9	489.4	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/02/74	01:00:01.06	66.10 (?)	112.65 (?)

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZAK	50.383	103.283	1829.4	230.1			406.6	412.6	525.1	GS	record
SEY	62.917	152.417	1908.7	243.2						GS	record
UER	51.563	94.087	1924.6	244.1			427.5		549.9	GS	record
NVS	54.850	83.266	2012.7	249.7			446.1			GS	record
ELT	53.253	86.277	2033.4	256.3			453.1			GS	record
ESOR	55.900	158.700	2658.9		316.9					GS	record
SVE	56.827	60.637	2858.1		331.9					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/12/75	15:00:00.60	70.763	126.953

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TIK	71.630	128.870	118.8	22.4		19.4			38.4	GS RAS	record
TIK	71.633	128.867	119.1				37.9			ISC	bulletin
TIK	71.633	128.867	119.1	18.9						ISC	bulletin
YAK	62.017	129.717	982.8	125.4						ISC	bulletin
SEY	62.917	152.417	1401.6	180.0						GS RAS	record
NRI	69.430	88.083	1459.4	185.4						GS RAS	record
BOD	57.850	114.183	1558.7	194.6						ISC	bulletin
BOD	57.850	114.183	1558.7	194.7			342.6		440.6	GS RAS	record
CAA	56.900	118.270	1599.2	199.2			353.7	368.7	462.2	GS RAS	record
SKL	55.870	117.380	1722.7	214.2			374.7	383.9	495.7	GS RAS	record
BMKS	54.711	128.842	1791.0	224.0			399.0		508.0	GS RAS	record
KROS	54.433	126.971	1819.6	226.4	234.4		400.4	418.4		GS RAS	record
KMO	55.880	111.200	1823.6	224.7			401.9			GS RAS	record
TUP	54.430	119.900	1852.6	228.4			404.4	423.4		GS RAS	record
NIZ	55.770	109.550	1869.3	232.6			408.6	428.1	527.1	GS RAS	record
YASS	53.290	128.000	1947.4	242.7	247.2		428.4	438.4		GS RAS	record
BDN	53.700	110.110	2075.9	258.6			453.6	477.4	586.6	GS RAS	record
NKL	53.150	140.680	2078.4	259.8						GS RAS	record
OSR	59.250	163.060	2080.0		260.8					GS RAS	record
ILT	67.833	-178.800	2091.9	261.4						ISC	bulletin
TIG	52.770	106.330	2254.3		273.3		488.8	521.1	636.1	GS RAS	record
KBG	56.255	162.705	2341.3		279.8					GS RAS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/12/75	15:00:00.60	70.763	126.953

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
IRK	52.272	104.310	2353.6				507.9			ISC	bulletin
IRK	52.272	104.310	2353.6		284.9					ISC	bulletin
IRK	52.242	104.270	2357.6		284.8			524.9	667.3	GS RAS	record
TIV	50.863	142.656	2358.2		287.2					GS RAS	record
ARS	51.920	102.430	2436.5		293.4			529.1	680.4	GS RAS	record
ORL	52.520	99.830	2443.4		294.6			535.1	693.1	GS RAS	record
KHP	49.720	112.370	2463.0	310.4	295.9				702.9	GS RAS	record
MOY	51.683	100.983	2498.1		299.4					ISC	bulletin
MOY	51.670	101.000	2499.1		299.8		544.6		712.8	GS RAS	record
ABH	53.265	158.738	2503.4		300.9					GS RAS	record
PET	53.017	158.650	2525.3		304.4					ISC	bulletin
ZAK	50.383	103.283	2575.3		307.0					ISC	bulletin
ZAK	50.383	103.283	2575.3		307.0			562.0	722.5	GS RAS	record
UER	51.563	94.087	2705.5	318.0			573.4			GS RAS	record
NVS	54.850	83.266	2744.7	321.0			585.0			GS RAS	record
YSS	46.967	142.767	2781.3		325.4					GS RAS	record
YSS	46.958	142.761	2782.2		324.4					ISC	bulletin
ELT	53.253	86.277	2791.5	325.9						GS RAS	record
ELT	53.250	86.267	2792.2		325.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/29/75	11:00:00.43	69.578	90.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	89.7			13.0	27.0		23.0	GS	record
TIK	71.630	128.870	1421.7	180.1			319.6		406.6	GS	record
BOD	57.850	114.183	1737.0	213.4			383.6	401.1	499.6	GS	record
NIZ	55.770	109.550	1808.7	221.1			395.6	416.9	515.1	GS	record
KMO	55.880	111.200	1841.6	227.2			396.2	415.7	523.7	GS	record
NLT	56.500	115.700	1913.1	233.6			418.4	438.6	543.9	GS	record
YAK	62.016	129.717	1944.2	241.1			426.1	451.1	556.1	GS	record
CAA	56.900	118.270	1957.9	241.7			428.7	441.7	553.7	GS	record
ORL	52.520	99.830	1962.6	242.6			427.4	443.2		GS	record
BDN	53.700	110.110	2034.6	248.4			445.6	460.6	581.6	GS	record
TIG	52.770	106.330	2045.5	249.7			447.4	463.6	582.9	GS	record
IRK	52.242	104.270	2061.8	253.4			451.4		584.9	GS	record
USZ	56.550	121.600	2102.9	258.6			459.1	473.6	595.6	GS	record
BRV&	53.005	70.050	2119.0	260.2						CSE	record
ARU	56.416	58.570	2132.6	261.8				472.6		GS	record
MAKI&	52.570	70.617	2150.2	265.0						CSE	record
CLN	56.870	124.900	2190.1	268.1			476.6	488.6	631.6	GS	record
CGD	58.750	130.620	2239.2	272.8			490.6	503.6	643.6	GS	record
ZAK	50.383	103.283	2245.2		274.8			504.0	641.8	GS	record
TUP	54.430	119.900	2245.8		274.3			505.1	641.1	GS	record
USN	64.550	143.180	2286.7	279.6	281.6				653.6	GS	record
KEV	69.755	27.007	2347.4		285.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/29/75	11:00:00.43	69.578	90.337

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KROS	54.433	126.971	2487.2		299.3			544.3	712.6	GS	record
SOD	67.371	26.629	2502.4		299.6					ISC	bulletin
BMKS	54.711	128.842	2528.8		302.6					GS	record
TRO	69.632	18.928	2620.8		311.6					ISC	bulletin
YASS	53.290	128.000	2630.7		312.8				760.6	GS	record
KJF	64.199	27.715	2679.0		316.1					ISC	bulletin
SEY	62.917	152.417	2753.1		323.6					GS	record
UME	63.815	20.237	2980.6		341.6					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
76/11/05	03:59:59.98	61.458	112.860

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BOD	57.850	114.183	408.6	56.9		66.8	101.6		119.5	GS	record
NLT	56.500	115.700	575.6	76.5		92.0	134.5		158.5	GS	record
CAA	56.900	118.270	593.9	80.8		94.5	143.0		160.0	GS	record
KMO	55.880	111.200	628.4	82.3		103.3	146.3		176.3	GS	record
NIZ	55.770	109.550	661.6	88.9		106.9	156.4		184.9	GS	record
SKL	55.870	117.380	674.8	89.3		112.0		159.0	194.0	GS	record
USZ	56.550	121.600	740.9	96.5						GS	record
BDN	53.700	110.110	878.9	112.8		143.6	200.1	204.6	247.6	GS	record
TUP	54.430	119.900	885.3	115.5		144.3	201.8	209.9	249.8	GS	record
YAK	62.016	129.717	890.3	114.7		145.5	202.7		252.7	GS	record
CGD	58.750	130.620	1028.9	129.5		164.0		238.0	293.5	GS	record
TIG	52.770	106.330	1043.5	133.0		171.0	234.8	250.5	294.5	GS	record
CIT	52.020	113.550	1051.2			173.0			301.0	GS	record
KROS	54.433	126.971	1139.9	146.5		186.0	266.0		323.0	GS	record
IRK	52.242	104.270	1149.5	145.5		186.5	251.5	255.5	325.5	GS	record
BMKS	54.711	128.842	1199.7	152.0		190.6	265.6		339.0	GS	record
ZEA	53.738	127.250	1210.8	154.8					338.0	GS	record
ARS	51.920	102.430	1235.6	154.7		197.7	275.7	283.7	347.7	GS	record
BTGS	67.651	134.640	1241.7	156.0		268.0	282.0	287.0	356.5	GS	record
ORL	52.520	99.830	1266.6	161.2			285.7	298.7	359.7	GS	record
YASS	53.290	128.000	1280.8	163.2		215.5	282.8		362.5	GS	record
MOY	51.670	101.000	1306.2	163.0	184.5		292.0	308.0	370.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
76/11/05	03:59:59.98	61.458	112.860

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KHP	49.720	112.370	1306.4	169.1	184.2		298.9	312.4	371.9	GS	record
ZAK	50.383	103.283	1366.7	171.9		219.7	307.7	324.4	391.7	GS	record
NRI	69.430	88.083	1435.8	183.0		236.5	316.7		403.0	GS	record
USN	64.550	143.180	1557.9	195.7			344.7	359.2	441.7	GS	record
UER	51.563	94.087	1585.2	199.2		256.9	354.7		442.2	GS	record
ELT	53.253	86.277	1823.0	227.7			410.8			GS	record
NVS	54.850	83.266	1870.0	232.0			413.2			GS	record
NKL	53.150	140.680	1893.4	240.5					539.0	GS	record
YAGR	62.530	149.620	1903.7	237.9						GS	record
USO	61.133	149.631	1944.8	242.5						GS	record
SEY	62.917	152.417	2033.3	251.5		331.5195				GS	record
MA1	60.046	150.730	2041.2	253.0						GS	record
TIV	50.863	142.656	2164.8	267.8						GS	record
PEK	40.040	116.175	2391.2		290.0					ISC	bulletin
BRV&	53.005	70.050	2691.9		314.7					CSE	record
REI	45.267	148.033	2893.8		335.7					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/26/77	17:00:00.22	69.575	90.375

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	91.1	16.4		12.8	27.8		23.8	GS	record
NVS	54.850	83.266	1679.1	207.5			372.3			GS	record
BOD	57.850	114.183	1735.6	213.9			383.9	403.0	494.9	GS	record
BTGS	67.651	134.640	1774.7	220.3	228.3		392.3	408.3	502.8	GS	record
NIZ	55.770	109.550	1807.5	221.2			395.6	410.8	518.8	GS	record
ELT	53.253	86.277	1830.4	227.0			421.0			GS	record
KMO	55.880	111.200	1840.3	227.3			395.5	416.0	524.0	GS	record
NLT	56.500	115.700	1911.7	239.4			421.0	433.0	545.0	GS	record
YAK	62.016	129.717	1942.7	241.8			419.8	447.8	552.8	GS	record
CAA	56.900	118.270	1956.4	241.6			432.6	448.6	559.6	GS	record
ORL	52.520	99.830	1961.8	242.8			429.8	447.3	567.8	GS	record
SKL	55.870	117.380	2025.0	248.3	250.5		443.5	458.5	574.5	GS	record
CHKA&	53.720	70.650	2031.1	249.6						CSE	record
BDN	53.700	110.110	2033.4	248.4			444.7	459.4	584.4	GS	record
TIG	52.770	106.330	2044.4	250.0			449.6	463.6	588.3	GS	record
IRK	52.242	104.270	2060.8	251.2			448.7	469.9	585.9	GS	record
ARS	51.920	102.430	2064.3	254.3	258.3		458.1	463.3	591.3	GS	record
MOY	51.670	101.000	2070.2	257.8				464.6	588.1	GS	record
USZ	56.550	121.600	2101.4	259.8			456.8	471.3	595.8	GS	record
BRV&	53.005	70.050	2119.7	259.7						CSE	record
VOST&	52.720	70.970	2126.7	268.4						CSE	record
ARU	56.416	58.570	2133.8	261.8	272.8			479.3		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/26/77	17:00:00.22	69.575	90.375

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CLN	56.870	124.900	2188.6	267.3			476.8	483.3	621.8	GS	record
EO1	77.658	21.217	2189.9	269.4						ISC	bulletin
CGD	58.750	130.620	2237.7	272.8			491.8	502.8	637.8	GS	record
ZAK	50.383	103.283	2244.3	274.5				506.3	642.1	GS	record
TUP	54.430	119.900	2244.4	277.2	275.4			502.2	642.2	GS	record
USN	64.550	143.180	2285.3	279.3					645.8	GS	record
CIT	52.020	113.550	2294.9		281.2				652.2	GS	record
KEV	69.755	27.007	2348.8		285.6					ISC	bulletin
KBS	78.918	11.924	2354.3		286.4					ISC	bulletin
KHP	49.720	112.370	2502.3		300.6				716.9	GS	record
SOD	67.371	26.629	2503.8		300.9					ISC	bulletin
TRO	69.632	18.928	2622.2		311.8					ISC	bulletin
KJF	64.199	27.715	2680.5		316.0					ISC	bulletin
KIR	67.840	20.417	2688.1		312.8					ISC	bulletin
SEY	62.917	152.417	2751.8		322.3					GS	record
USO	61.133	149.631	2782.6		325.4				778.8	GS	record
UME	63.815	20.237	2982.1		342.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/10/77	22:00:00.10	50.955	110.983

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KHP	49.720	112.370	169.0			28.9				GS	record
CIT	52.020	113.550	213.9	34.9			61.9			GS	record
TIG	52.770	106.330	378.4	52.7		59.9	91.9		104.9	GS	record
IRK	52.242	104.270	486.1	67.1		79.7	117.9		136.9	GS	record
ZAK	50.383	103.283	547.3	74.4		86.5	134.4		154.9	GS	record
KMO	55.880	111.200	547.9	75.5		87.5	131.5		156.5	GS	record
ARS	51.920	102.430	603.5	82.1		98.1	141.3		167.9	GS	record
MOY	51.670	101.000	699.5	93.9		113.1	163.9		200.9	GS	record
TUP	54.430	119.900	714.9	94.9		115.9	165.9		199.9	GS	record
ORL	52.520	99.830	788.4	105.9		127.9	185.4		223.4	GS	record
BOD	57.850	114.183	794.4	105.3		126.9			224.4	GS	record
CAA	56.900	118.270	815.2	107.9		132.4	195.4		233.9	GS	record
USZ	56.550	121.600	934.7	121.9		151.9	218.2		268.9	GS	record
CLN	56.870	124.900	1122.7	145.9		183.9	256.4		315.4	GS	record
UER	51.563	94.087	1177.8	154.1		191.6	272.0		331.3	GS	record
CGD	58.750	130.620	1520.9	194.9				370.6	431.9	GS	record
YAK	62.016	129.717	1674.9	212.4			374.4	402.4	468.4	GS	record
KHG	62.650	135.550	1964.2	245.4					563.4	GS	record
NRI	69.430	88.083	2385.0		285.5				672.4	GS	record
USN	64.550	143.180	2397.3	296.9	293.9				683.9	GS	record
USO	61.133	149.631	2610.0		301.9				738.9	GS	record
MA1	60.046	150.730	2656.6		318.4			574.9		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/10/77	22:00:00.10	50.955	110.983

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TLG&	43.238	77.225	2672.5	317.9						CSE	record
OIC	34.099	135.317	2711.9		321.1					ISC	bulletin
CHKA&	53.720	70.650	2726.9		323.0					CSE	record
VOST&	52.720	70.970	2727.3		323.4					CSE	record
BRV&	53.005	70.050	2781.2		326.4					CSE	record
SEY	62.917	152.417	2784.0		325.9			588.9	786.9	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/20/77	22:00:00.78	64.108	99.558

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	776.9	99.6		120.6	177.6		213.6	GS	record
BOD	57.850	114.183	1050.4	134.0		170.2	234.2		293.2	GS	record
NIZ	55.770	109.550	1080.8	139.0		177.5	245.2		304.0	GS	record
KMO	55.880	111.200	1119.5	143.9		182.3	247.6	256.7	316.9	GS	record
NLT	56.500	115.700	1224.0	157.2			277.2		345.2	GS	record
CAA	56.900	118.270	1296.0	164.6	176.0	207.7	292.2		361.7	GS	record
BDN	53.700	110.110	1304.8	165.2	184.0	216.5	294.5		371.5	GS	record
TIG	52.770	106.330	1321.0	167.2			295.0	309.3	375.7	GS	record
SKL	55.870	117.380	1344.5	169.3		213.2	295.4	320.9	379.9	GS	record
ARS	51.920	102.430	1367.0	172.5		225.8	302.0		386.3	GS	record
NVS	54.850	83.266	1375.8	174.4			306.7			GS	record
MOY	51.670	101.000	1387.2	176.2		223.5	304.2	316.7	394.2	GS	record
ELT	53.253	86.277	1426.8	181.2			325.0			GS	record
UER	51.563	94.087	1432.5	182.5			317.7			GS	record
YAK	62.016	129.717	1527.6	192.5			338.7	373.5	440.2	GS	record
CLN	56.870	124.900	1593.5	197.8			347.8	375.2	454.2	GS	record
CGD	58.750	130.620	1740.7	213.8	228.0		378.2	400.2	494.2	GS	record
CHKA&	53.720	70.650	1999.3	249.0						CSE	record
VOST&	52.720	70.970	2067.3	255.7						CSE	record
USN	64.550	143.180	2068.1	257.2			461.7			GS	record
BRV&	53.005	70.050	2084.8	257.0						CSE	record
ARU	56.416	58.570	2374.3		287.2			526.2		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/20/77	22:00:00.78	64.108	99.558

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
USO	61.133	149.631	2523.2		301.2					GS	record
SEY	62.917	152.417	2558.7		305.2		559.2	550.2	731.2	GS	record
MA1	60.046	150.730	2636.8		313.2					GS	record
TLG&	43.238	77.225	2717.8	319.2						CSE	record
PEK	40.040	116.175	2887.1		335.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/10/77	16:00:00.18	57.251	106.551

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVK	56.190	113.520	442.3	62.6		72.9	106.9		125.2	GS	record
BOD	57.850	114.183	461.3	62.9		72.4	109.9		126.4	GS	record
ZAK	50.383	103.283	793.4	104.8		127.1	180.1	187.1	225.6	GS	record
TUP	54.430	119.900	891.0	116.4	118.1	147.4	204.4	212.9	252.4	GS	record
USZ	56.550	121.600	918.0	120.8						GS	record
UER	51.563	94.087	1024.3	135.0		168.0	241.8		289.1	GS	record
CLN	56.870	124.900	1110.2	143.8			256.0		317.3	GS	record
ELT	53.253	86.277	1357.1	174.8		222.3	307.9		381.0	GS	record
YAK	62.016	129.717	1400.6	175.6			308.8	342.8	396.8	GS	record
CGD	58.750	130.620	1424.6	179.0			315.8	349.8	404.8	GS	record
NRI	69.430	88.083	1627.9	200.1			354.8		457.8	GS	record
BTGS	67.651	134.640	1828.3	226.3	233.3		405.3	421.8		GS	record
USN	64.550	143.180	2110.2	259.8			463.8	474.8		GS	record
CHKA&	53.720	70.650	2274.5	278.5						CSE	record
VOST&	52.720	70.970	2303.4	280.5						CSE	record
BRV&	53.005	70.050	2344.6	283.0						CSE	record
USO	61.133	149.631	2452.2	299.8	295.8					GS	record
MA1	60.046	150.730	2534.2		305.5					GS	record
SEY	62.917	152.417	2568.8	319.0	306.4				730.8	GS	record
TLG&	43.238	77.225	2573.1	306.9						CSE	record
ARU	56.416	58.570	2868.1		338.8					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/24/78	18:00:00.35	65.925	112.338

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BOD	57.850	114.183	904.8	114.2		143.7				GS	record
TIK	71.630	128.870	917.1	119.1		148.9	210.9		258.7	GS	record
YAK	62.016	129.717	951.9	124.3		159.9	216.5		276.9	GS	record
BTGS	67.651	134.640	994.2	128.5		161.6	221.7	237.1	287.1	GS	record
CAA	56.900	118.270	1053.0	133.4		170.9	242.9		296.7	GS	record
NLT	56.500	115.700	1065.0	134.2		170.1	242.7		356.2	GS	record
SVK	56.190	113.520	1086.3	137.0		171.7	249.7		300.7	GS	record
NRI	69.430	88.083	1091.3	139.0			239.0		299.7	GS	record
KMO	55.880	111.200	1120.6	140.7		179.2	254.4		313.7	GS	record
NIZ	55.770	109.550	1141.0	143.5		180.7	257.0		321.5	GS	record
USZ	56.550	121.600	1153.9	145.4		190.9	261.4	276.4	331.4	GS	record
SVB	55.640	109.350	1156.8	145.9		186.1	257.9		318.7	GS	record
KHG	62.650	135.550	1173.8	149.7		189.0	261.0	271.5	344.0	GS	record
CLN	56.870	124.900	1206.7	151.7			270.4		339.4	GS	record
CGD	58.750	130.620	1231.4	156.0			272.0	276.6	343.0	GS	record
BDN	53.700	110.110	1367.0	171.3			303.7	339.7	381.7	GS	record
USN	64.550	143.180	1435.3	182.9			324.4		408.4	GS	record
TIG	52.770	106.330	1502.5	186.5			334.2	367.7	417.2	GS	record
CIT	52.020	113.550	1549.8	196.7			345.7		440.7	GS	record
IRK	52.242	104.270	1589.1	196.9			346.7	375.7	438.2	GS	record
ORL	52.520	99.830	1647.5	205.7			365.7	390.7	463.7	GS	record
ARS	51.920	102.430	1655.8	205.2			367.2	393.2	471.2	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/24/78	18:00:00.35	65.925	112.338

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MOY	51.670	101.000	1710.9	213.7	222.5		383.3	404.7	485.7	GS	record
KHP	49.720	112.370	1803.9	225.9	232.5		400.5	409.7	505.7	GS	record
ZAK	50.383	103.283	1806.1	223.7	232.7		399.9	420.7	505.7	GS	record
USO	61.133	149.631	1898.5	237.9						GS	record
UER	51.563	94.087	1900.7	237.2			441.7		534.7	GS	record
SEY	62.917	152.417	1925.6	243.3		310.25			548.3	GS	record
NVS	54.850	83.266	1991.8	244.7		318.15	435.7		574.7	GS	record
ELT	53.253	86.277	2011.0	249.7			437.7		569.0	GS	record
MA1	60.046	150.730	2015.8	251.6					581.3	GS	record
OMS	62.515	155.775	2097.8	261.5						GS	record
OSR	59.250	163.060	2628.1		316.2					GS	record
ESO	55.925	158.700	2670.3		317.2					GS	record
VOST&	52.720	70.970	2701.6		317.2					CSE	record
KOZ	56.058	159.872	2713.5		320.9					GS	record
BRV&	53.005	70.050	2718.8		317.7					CSE	record
KLY	56.313	160.652	2729.8		323.0					GS	record
VDP	55.750	160.260	2754.7		323.4					GS	record
TLBR	55.753	160.420	2761.7		324.7					GS	record
KII	54.036	159.449	2852.2		330.3					GS	record
TOP	53.230	158.041	2853.7		330.7					GS	record
PEK	40.040	116.175	2888.6		333.7					ISC	bulletin
PETR	53.023	158.653	2898.4		333.7					GS	record
PAU	51.463	156.806	2945.8		336.6					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/09/78	18:00:00.79	63.678	125.522

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
YAK	62.016	129.717	282.6	41.7					80.7	GS	record
KHG	62.650	135.550	517.4	73.2		83.2				GS	record
BTGS	67.651	134.640	608.9	82.7		101.1		145.7	176.2	GS	record
CGD	58.750	130.620	613.1	81.7						GS	record
CLN	56.870	124.900	759.0	99.8		121.8		238.3		GS	record
USZ	56.550	121.600	822.9	108.2						GS	record
CAA	56.900	118.270	853.6	110.6		140.2	201.0	210.0	245.0	GS	record
USN	64.550	143.180	863.0	113.8			193.2		246.2	GS	record
BOD	57.850	114.183	893.8	116.7		147.3			255.3	GS	record
TIK	71.630	128.870	897.9	117.0		143.2	210.2		253.7	GS	record
SKL	55.870	117.380	980.7	125.6		159.7	222.6			GS	record
SUU	62.781	148.148	1135.7	147.7		186.2	251.7	265.7	324.2	GS	record
KMO	55.880	111.200	1178.4		149.7	187.7	268.7		334.7	GS	record
NIZ	55.770	109.550	1251.5	159.6			279.1	286.1	347.2	GS	record
USO	61.133	149.631	1269.8	163.9		204.9		286.4	369.2	GS	record
SVB	55.640	109.350	1270.6	160.6	170.6	212.7	284.6	290.6	364.6	GS	record
MA1	60.046	150.730	1376.5	177.6		223.6	308.4	319.2	390.6	GS	record
BDN	53.700	110.110	1417.9	178.5		231.7	310.7		403.7	GS	record
CIT	52.020	113.550	1474.1	186.9		238.5		328.8	420.8	GS	record
OMS	62.515	155.775	1518.8	194.9				345.4		GS	record
TIG	52.770	106.330	1644.1	206.4			342.9	354.4	467.9	GS	record
KHP	49.720	112.370	1741.9	219.0		288.7	393.7	404.7	502.7	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/09/78	18:00:00.79	63.678	125.522

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	1748.1	215.8				378.4	493.2	GS	record
IRK	52.242	104.270	1773.1	219.5		295.7	388.7	406.2	514.2	GS	record
ARS	51.920	102.430	1876.8	231.5		305.9	408.9	425.4	529.9	GS	record
ORL	52.520	99.830	1935.4	238.0		317.0	426.9	443.4	552.5	GS	record
MOY	51.670	101.000	1958.6	242.5		320.2	430.2	447.2	559.7	GS	record
ZAK	50.383	103.283	1982.2	245.9		324.2	434.4	445.9	563.9	GS	record
KOZ	56.058	159.872	2070.0		260.8					GS	record
KLY	56.313	160.652	2090.9		262.5					GS	record
PDK	56.140	160.780	2108.9		265.7					GS	record
VDP	55.750	160.260	2110.3		262.9					GS	record
TLBR	55.753	160.420	2117.9		264.2					GS	record
TOP	53.230	158.041	2190.0		270.4					GS	record
KII	54.036	159.449	2195.3		270.3					GS	record
KBG	56.255	162.705	2195.9		273.5					GS	record
PETR	53.023	158.653	2235.2		274.7					GS	record
KRI	54.590	161.163	2237.2		275.2					GS	record
UER	51.563	94.087	2273.9	277.8			511.8			GS	record
PAU	51.463	156.806	2275.3		278.3					GS	record
SPN	53.098	160.023	2294.7		281.1					GS	record
BRI	55.204	165.972	2429.4		293.2					GS	record
ELT	53.253	86.277	2512.5	299.7						GS	record
NVS	54.850	83.266	2543.6	302.4		382.21	541.2			GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/09/78	18:00:00.79	63.678	125.522

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
PEK	40.040	116.175	2698.9		318.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/21/78	15:00:00.19	66.598	86.210

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	325.0	47.0		52.8	86.8		94.8	GS	record
NVS	54.850	83.266	1318.0	163.1			292.6			GS	record
ELT	53.253	86.277	1486.2	185.4			332.0			GS	record
NIZ	55.770	109.550	1721.3	213.2	222.8		378.3	402.8	490.8	GS	record
SVB	55.640	109.350	1725.6	213.1			381.6		483.8	GS	record
BOD	57.850	114.183	1727.8	212.0	220.8		374.8	394.8	495.8	GS	record
UER	51.563	94.087	1730.7	216.3			382.8			GS	record
ORL	52.520	99.830	1737.6	221.6	227.8		384.2	410.0	498.8	GS	record
TIK	71.630	128.870	1745.0	218.8			387.8	408.8	503.8	GS	record
BRV&	53.005	70.050	1752.6	215.8	225.6		396.6	407.8	491.9	CSE	record
VOST&	52.720	70.970	1757.2	218.7	228.1		398.6	410.8	494.9	CSE	record
KMO	55.880	111.200	1773.8	219.6			393.4	407.8	501.8	GS	record
KVO	56.140	113.050	1823.4	225.2	230.8		403.7	417.8	522.8	GS	record
ARU	56.416	58.570	1831.9	226.8	233.8					GS	record
SVK	56.190	113.520	1837.8	226.3	234.8		405.3	416.8	527.3	GS	record
OZE	56.300	113.980	1846.9	227.3	235.5		405.8	417.8	528.8	GS	record
MOY	51.670	101.000	1854.3	231.0	237.0		406.5	427.0	531.8	GS	record
ARS	51.920	102.430	1865.0	231.6	240.0		410.2	428.6	533.8	GS	record
IRK	52.242	104.270	1883.3	231.4			409.8	432.3	533.3	GS	record
TIG	52.770	106.330	1893.2	231.8	239.3		411.8		535.8	GS	record
NLT	56.500	115.700	1900.1	233.3	238.6		418.3	435.3	540.8	GS	record
BDN	53.700	110.110	1931.5	236.3			421.8	438.8	545.8	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/21/78	15:00:00.19	66.598	86.210

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CAA	56.900	118.270	1974.8	243.0	248.0		431.8	447.8	553.8	GS	record
SKL	55.870	117.380	2021.8	247.3	254.0		438.8	453.3	576.3	GS	record
ZAK	50.383	103.283	2045.7	251.8	255.2		444.5		582.8	GS	record
BTGS	67.651	134.640	2051.4	254.8			445.8	458.8	584.8	GS	record
YAK	62.016	129.717	2118.8	259.8	260.4		461.8	475.8	603.8	GS	record
USZ	56.550	121.600	2144.7	262.0			469.8	480.4	609.8	GS	record
CIT	52.020	113.550	2213.7	273.3					624.3	GS	record
TUP	54.430	119.900	2247.9	276.8				498.8	630.8	GS	record
CLN	56.870	124.900	2262.7	274.8			494.8	506.8	638.8	GS	record
KHG	62.650	135.550	2335.5		283.3		511.0	522.8	666.8	GS	record
CGD	58.750	130.620	2375.0	291.8	285.6		518.8	531.8	684.8	GS	record
KEV	69.755	27.007	2383.1		287.9					ISC	bulletin
KHP	49.720	112.370	2391.7		289.1			539.8	680.8	GS	record
SOD	67.371	26.629	2502.2		298.8					ISC	bulletin
USN	64.550	143.180	2547.6		304.8			554.8	725.8	GS	record
KBS	78.918	11.924	2555.2		304.6					ISC	bulletin
KJF	64.199	27.715	2630.8		310.6					ISC	bulletin
TLG&	43.238	77.225	2655.4	314.8						CSE	record
TRO	69.632	18.928	2676.5		315.5					ISC	bulletin
KIR	67.840	20.417	2713.4		319.0					ISC	bulletin
SUU	62.781	148.148	2861.3		331.3				817.3	GS	record
OS&	41.728	72.840	2886.1	334.8						CSE	record
UME	63.815	20.237	2958.4		338.5					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/21/78	15:00:00.19	66.598	86.210

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NUR	60.509	24.651	2999.9		341.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
78/10/17	14:00:00.16	63.185	63.432

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	724.9	95.5		119.6	165.8		197.8	GS	record
ARU	56.416	58.570	801.1	103.3		127.3	184.3		224.3	GS	record
BRV&	53.005	70.050	1197.1	152.6		192.5	269.5		337.3	CSE	record
VOST&	52.720	70.970	1245.5	158.4		200.1	288.3		352.9	CSE	record
NRI	69.430	88.083	1293.0	163.8		208.1	286.6		346.8	GS	record
NVS	54.850	83.266	1458.7	182.1			325.0			GS	record
ELT	53.253	86.277	1722.5	213.6			386.6			GS	record
KEV	69.755	27.007	1746.5					382.4		ISC	bulletin
KEV	69.755	27.007	1746.5	215.0						ISC	bulletin
KJF	64.199	27.715	1747.0					383.5		ISC	bulletin
KJF	64.199	27.715	1747.0	216.0						ISC	bulletin
SOD	67.371	26.629	1751.2					384.8		ISC	bulletin
SOD	67.371	26.629	1751.2	216.2						ISC	bulletin
KIR	67.840	20.417	2011.1					437.7		ISC	bulletin
KIR	67.840	20.417	2011.1	247.0						ISC	bulletin
NUR	60.509	24.651	2031.2					445.3		ISC	bulletin
NUR	60.509	24.651	2031.2	248.1						ISC	bulletin
TRO	69.632	18.928	2058.4	252.0						ISC	bulletin
TEL	51.033	90.233	2085.6		522.3					ISC	bulletin
UME	63.815	20.237	2111.1					464.3		ISC	bulletin
UME	63.815	20.237	2111.1	256.9						ISC	bulletin
UER	51.563	94.087	2217.6	273.0			490.0			GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
78/10/17	14:00:00.16	63.185	63.432

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TLG&	43.238	77.225	2389.7	289.8						CSE	record
KBS	78.918	11.924	2410.8		289.5					ISC	bulletin
UPP	59.858	17.627	2411.5				525.7			ISC	bulletin
UPP	59.858	17.627	2411.5		289.2					ISC	bulletin
KARK&	41.630	72.730	2472.7	295.2						CSE	record
DBC	43.020	46.830	2485.2		297.2				673.8	GS	record
BUY	42.810	47.130	2499.0		306.8			553.8		GS	record
HFS	60.134	13.696	2588.9		306.0					ISC	bulletin
AKT	41.480	47.730	2623.0		311.3			579.3		GS	record
NAO	60.824	10.832	2689.8		315.6					ISC	bulletin
WAR	52.242	21.024	2738.1		320.8					ISC	bulletin
KON	59.649	9.598	2814.3		326.0					ISC	bulletin
TBZ	40.996	39.776	2913.9		339.0					ISC	bulletin
COP	55.683	12.433	2923.8						649.8	ISC	bulletin
COP	55.683	12.433	2923.8				616.8			ISC	bulletin
COP	55.683	12.433	2923.8		334.8					ISC	bulletin
KRA	50.058	19.940	2962.2		338.8					ISC	bulletin
BER	60.383	5.334	2975.1		339.8					ISC	bulletin
CFR	45.185	28.153	2983.7		401.3					ISC	bulletin
NIE	49.419	20.313	2995.1		343.8					ISC	bulletin
MAIO	36.308	59.472	2998.7		343.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
79/08/12	18:00:00.21	61.803	122.430

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
YAK	62.016	129.717	383.4	55.6						GS	record
YAK	62.016	129.717	383.4	56.3						GS	bulletin
TUG	57.290	121.500	505.3	68.0		81.0				GS	record
CGD	58.750	130.620	565.8	76.5		87.5		137.5	154.0	GS	record
CLN	56.870	124.900	566.9	77.1		86.2	136.7		154.7	GS	record
PELE&	59.650	112.667	583.4	77.6						CSE	record
USZ	56.550	121.600	586.8	78.5		92.5		147.5	167.5	GS	record
CAA	56.900	118.270	594.7	78.3		96.8	140.8		169.8	GS	record
BOD	57.850	114.183	637.6	85.5		105.2	151.8		182.8	GS	record
KHG	62.650	135.550	687.5	91.7		111.4		160.9	190.9	GS	record
OZE	56.300	113.980	780.0	103.1		126.4	182.8		223.8	GS	record
KVO	56.140	113.050	828.2	108.8		134.3	196.8		238.3	GS	record
TUP	54.430	119.900	834.1	107.4		135.2	195.8		233.2	GS	record
KROS	54.433	126.971	862.5	111.4		137.8			239.9	GS	record
BTGS	67.651	134.640	870.7	114.2		145.2	193.5	200.4		GS	record
BMKS	54.711	128.842	873.7	113.6			206.8		240.8	GS	record
KMO	55.880	111.200	922.3	118.8		146.8	211.8		260.3	GS	record
NIZ	55.770	109.550	999.6	129.3		157.8	227.8		285.8	GS	record
YASS	53.290	128.000	1003.7		128.8			233.3	282.1	GS	record
SVB	55.640	109.350	1018.8	131.8		161.8	233.4		293.8	GS	record
TIK	71.630	128.870	1130.5	144.8		179.8	255.3			GS	record
TIK	71.630	128.870	1130.5	145.3						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
79/08/12	18:00:00.21	61.803	122.430

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BDN	53.700	110.110	1158.5	148.8		185.3	270.8		327.8	GS	record
CIT	52.020	113.550	1213.2	155.6		196.8	286.8		336.8	GS	record
RMNS	50.863	129.398	1289.7		166.3				365.8	GS	record
SUU	62.781	148.148	1329.9	170.8					382.8	GS	record
TIG	52.770	106.330	1390.0	175.8			308.6	340.3	394.8	GS	record
NKL	53.150	140.680	1448.8		184.2				184.2	GS	record
KHP	49.720	112.370	1481.3	188.8			326.8	360.8	416.3	GS	record
GRNR	50.769	136.422	1495.8		192.1				416.0	GS	record
KHIR	49.140	131.200	1510.9		195.1					GS	record
IRK	52.242	104.270	1522.4	190.3			332.8	370.8	428.8	GS	record
MA1	60.046	150.730	1534.4	196.1						GS	record
MA1	60.046	150.730	1534.4	196.3						GS	bulletin
SEY	62.917	152.417	1543.2	196.8						GS	bulletin
SEY	62.917	152.417	1543.2	196.9					436.3	GS	record
ARS	51.920	102.430	1629.9	202.6	215.1		365.1		461.8	GS	record
ORL	52.520	99.830	1698.6	211.8	220.8		372.8	394.8	482.3	GS	record
MOY	51.670	101.000	1714.8	213.8						GS	bulletin
MOY	51.670	101.000	1714.8	215.3	223.8		375.8	397.3	481.8	GS	record
ZAK	50.383	103.283	1728.8	216.7						GS	bulletin
ZAK	50.383	103.283	1728.8	217.3	224.7		382.3	404.8	481.8	GS	record
TIV	50.863	142.656	1731.4		219.5					GS	record
NRI	69.430	88.083	1763.5	216.3	224.3		378.8	387.8	507.8	GS	record
CES	68.750	161.170	1925.9	242.7						GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
79/08/12	18:00:00.21	61.803	122.430

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CN2	43.801	125.448	2011.5	252.8						ISC	bulletin
UER	51.563	94.087	2051.1	249.8			464.8			GS	record
YSS	46.967	142.767	2094.8	262.8						GS	bulletin
UTER	46.610	143.070	2140.7		326.4					GS	record
ESO	55.925	158.700	2159.4		267.1					GS	record
VLA	43.120	131.893	2169.2		255.6					GS	bulletin
KOZ	56.058	159.872	2213.3		273.8					GS	record
KLY	56.313	160.652	2239.5		277.3					GS	record
VDP	55.750	160.260	2252.2		282.5					GS	record
PDK	56.140	160.780	2256.4		279.9					GS	record
APH	56.000	160.830	2267.3		283.3					GS	record
TOP	53.230	158.041	2299.2		281.3					GS	record
ELT	53.253	86.277	2325.9		281.8					GS	bulletin
ELT	53.253	86.277	2325.9	281.8						GS	record
PETR	53.023	158.653	2345.5		285.4					GS	record
KBG	56.255	162.705	2351.0		282.8					GS	record
PAU	51.463	156.806	2362.8		291.8					GS	record
KRI	54.590	161.163	2372.2		287.4					GS	record
NVS	54.850	83.266	2378.3		287.3					GS	bulletin
NVS	54.850	83.266	2378.3	287.0			524.0			GS	record
SKR	50.683	156.117	2387.0		289.3					GS	bulletin
SKR	50.683	156.117	2387.0		289.5					GS	record
SPN	53.098	160.023	2412.0		294.2					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
79/08/12	18:00:00.21	61.803	122.430

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BJI	40.040	116.175	2455.8		295.8					ISC	bulletin
KUR	45.230	147.870	2466.2		296.8					GS	record
KUR	45.230	147.870	2466.2		297.3					GS	bulletin
REI	45.267	148.033	2469.7		297.0					GS	record
YUK	44.030	145.860	2497.9		298.0					GS	record
BTO	40.598	110.018	2501.2		300.8					ISC	bulletin
SHO	43.870	146.830	2552.0		301.8					GS	record
ILT	67.870	178.730	2653.2		322.4					GS	bulletin
KHE	80.620	58.050	2842.6		328.8					GS	bulletin
SEM	50.400	80.250	2847.3		328.3					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/79	18:00:00.31	64.110	99.562

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	776.9	100.0		120.7	176.7		217.7	GS	record
BOD	57.850	114.183	1050.4	132.9			234.9	244.9	290.7	GS	record
BOD	57.850	114.183	1050.4	133.8						GS	bulletin
NIZ	55.770	109.550	1080.8	137.5		177.0	245.0		300.5	GS	record
SVB	55.640	109.350	1088.2	137.7		177.5	244.5	256.5	311.5	GS	record
KMO	55.880	111.200	1119.5	142.8			248.3	258.3	319.8	GS	record
KVO	56.140	113.050	1157.0	148.1		191.9	262.9	272.4	329.5	GS	record
OZE	56.300	113.980	1176.0	150.2		195.8	265.3	273.1	329.8	GS	record
NLT	56.500	115.700	1223.9	155.2		198.7	275.2	283.2	346.2	GS	record
ORL	52.520	99.830	1290.4	165.3		213.7	292.7		370.7	GS	record
CAA	56.900	118.270	1295.9	164.2		211.7	292.7		372.2	GS	record
BDN	53.700	110.110	1304.9	164.4		216.9	293.9	308.9	373.9	GS	record
TIG	52.770	106.330	1321.1	167.0		214.7	294.7	309.7	376.0	GS	record
ARS	51.920	102.430	1367.2	172.3		219.7		312.7	383.7	GS	record
MOY	51.670	101.000	1387.4	171.7						GS	bulletin
TUG	57.290	121.500	1407.4	176.9			312.2	344.2		GS	record
ELT	53.253	86.277	1427.1	180.7						GS	bulletin
ELT	53.253	86.277	1427.1	180.7			323.5		406.7	GS	record
UER	51.563	94.087	1432.8	179.7		236.69	316.7		401.7	GS	record
TIK	71.630	128.870	1467.4	185.2					418.7	GS	record
USZ	56.550	121.600	1467.9	185.7			327.7	355.7	421.7	GS	record
YAK	62.016	129.717	1527.3	191.4						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/79	18:00:00.31	64.110	99.562

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZAK	50.383	103.283	1543.7	194.6						GS	bulletin
TUP	54.430	119.900	1570.1	197.7						GS	bulletin
TUP	54.430	119.900	1570.1	198.2		254.49		355.7	445.2	GS	record
CIT	52.020	113.550	1571.0	197.3		258.79		364.5	444.5	GS	record
CLN	56.870	124.900	1593.4	199.5			352.5		448.7	GS	record
BTGS	67.651	134.640	1623.9	202.7			357.7	377.7	459.7	GS	record
CGD	58.750	130.620	1740.5	213.7			382.2	406.7	498.7	GS	record
KHP	49.720	112.370	1773.5	221.0		291.69		388.7	507.2	GS	record
KHG	62.650	135.550	1782.7	220.7	228.5		396.3	414.7		GS	record
KROS	54.433	126.971	1874.3		231.3					GS	record
SEM	50.400	80.250	1903.5		233.7					GS	bulletin
BMKS	54.711	128.842	1937.8		238.9					GS	record
ZEA	53.738	127.250	1943.0		241.6					GS	record
CHKA&	53.720	70.650	1999.6	248.1						CSE	record
YASS	53.290	128.000	2013.4		249.5					GS	record
VOST&	52.720	70.970	2067.6	255.7						CSE	record
BRV	53.083	70.250	2069.6		254.7					GS	bulletin
SVE	56.827	60.637	2246.0		274.7					GS	bulletin
RMNS	50.863	129.398	2281.1		280.3					GS	record
SUU	62.781	148.148	2369.6	290.7	287.3				669.7	GS	record
ARU	56.416	58.570	2374.5		286.7			520.7		GS	record
SEY	62.917	152.417	2558.4		304.1					GS	bulletin
SEY	62.917	152.417	2558.4		304.7				726.7	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/06/79	18:00:00.31	64.110	99.562

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
GRNR	50.769	136.422	2607.3		309.2					GS	record
NKL	53.150	140.680	2618.6		311.2					GS	record
MA1	60.046	150.730	2636.5		311.7					GS	bulletin
MA1	60.046	150.730	2636.5		312.2					GS	record
MAG	59.554	150.805	2669.4		315.7					GS	record
CES	68.750	161.170	2676.5		314.7					GS	record
AAB	43.230	77.230	2718.8		319.7					GS	bulletin
PRZ	42.480	78.400	2758.2		323.5					GS	bulletin
FRU	42.830	74.620	2847.4		331.2					GS	bulletin
NOVT&	50.460	58.000	2854.5		330.5					CSE	record
BJI	40.040	116.175	2887.2		334.3					ISC	bulletin
APA	67.558	33.442	2899.7		335.5					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/04/79	16:00:00.03	60.675	71.455

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	757.1	98.0						GS	bulletin
SVE	56.827	60.637	757.1	99.0		119.2	170.0			GS	record
BRV	53.083	70.250	848.1	108.0						GS	bulletin
BRV&	53.005	70.050	857.9	107.7		136.1	193.2		238.8	CSE	record
ARU	56.416	58.570	885.0	113.0		138.9	201.5		252.5	GS	record
VOST&	52.720	70.970	885.8	111.2		138.7	202.2		242.4	CSE	record
NVS	54.850	83.266	953.6	124.0						GS	bulletin
NVS	54.850	83.266	953.6	124.8		155.8				GS	record
ELT	53.253	86.277	1217.4	154.8						GS	bulletin
ELT	53.253	86.277	1217.4	154.8			271.9			GS	record
NRI	69.430	88.083	1242.7	155.5		195.5	271.5	301.0	338.0	GS	record
ARTR	51.780	87.250	1385.5	113.5						GS	bulletin
NOVT&	50.460	58.000	1412.5	176.3			313.1	348.3	399.7	CSE	record
UER	51.563	94.087	1719.9	217.8		288.0	384.0			GS	record
APA	67.558	33.442	1965.2	243.0						GS	bulletin
TLG&	43.238	77.225	1976.8	244.2						CSE	record
AAB	43.230	77.230	1977.8	244.0						GS	bulletin
FRU	42.830	74.620	1995.2	248.8						GS	bulletin
MOS	55.738	37.625	2037.3	253.0						GS	bulletin
MOY	51.670	101.000	2065.0	258.0						GS	bulletin
PRZ	42.480	78.400	2076.3	260.7						GS	bulletin
KARK&	41.630	72.730	2118.7	264.3						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/04/79	16:00:00.03	60.675	71.455

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
OBN	55.115	36.568	2130.0	263.0						GS	bulletin
TAS	41.340	69.310	2154.1	267.5						GS	bulletin
NRN	41.430	76.000	2161.4	269.7						GS	bulletin
IRK	52.242	104.270	2198.8	270.2						GS	bulletin
ANR	40.750	72.370	2215.4	274.1						GS	bulletin
PUL	59.773	30.324	2243.8	275.0						GS	bulletin
KEV	69.755	27.007	2245.2	275.9						ISC	bulletin
KJF	64.199	27.715	2245.6	274.9						ISC	bulletin
PELE&	59.650	112.667	2252.9	276.2						CSE	record
SOD	67.371	26.629	2256.1	275.3						ISC	bulletin
KHE	80.620	58.050	2265.8	277.5						GS	bulletin
ZAK	50.383	103.283	2279.6	279.8						GS	bulletin
SAM	39.660	66.950	2356.1	286.0				516.8		GS	bulletin
GAR	39.000	70.320	2409.8	293.0						GS	bulletin
BOD	57.850	114.183	2412.5	290.4						GS	bulletin
DSH	38.570	68.760	2463.4	298.0				544.0		GS	bulletin
NUR	60.509	24.651	2509.7		300.7					ISC	bulletin
KIR	67.840	20.417	2515.4		300.5					ISC	bulletin
TRO	69.632	18.928	2557.9		305.3					ISC	bulletin
KHO	37.480	71.530	2577.0	308.3						GS	bulletin
UME	63.815	20.237	2611.4		309.5					ISC	bulletin
KAT	39.028	56.270	2626.4		314.0					GS	bulletin
PYA	44.033	43.058	2637.2		312.0					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/04/79	16:00:00.03	60.675	71.455

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ASH	37.950	58.350	2686.7		318.8					GS	bulletin
VAN	37.948	58.108	2692.8		318.0					GS	bulletin
TIK	71.630	128.870	2725.2		319.0					GS	bulletin
BKR	41.733	43.517	2828.0		330.3					GS	bulletin
KBS	78.918	11.924	2834.9		330.6					ISC	bulletin
MAIO	36.308	59.472	2837.3		331.2					ISC	bulletin
UPP	59.858	17.627	2896.2		333.8					ISC	bulletin
KBL	34.541	69.043	2907.7		335.8					ISC	bulletin
GRS	39.500	46.330	2922.1		337.2					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/10/80	07:00:00.06	61.75	66.75

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	648.9	85.2			150.9			GS	bulletin
SVE	56.827	60.637	648.9	85.7		104.9	150.9		175.9	GS	record
ARU	56.416	58.570	755.5	97.9		112.4	169.9		186.9	GS	record
CHKA&	53.720	70.650	923.1	117.7		149.2	215.0		259.5	CSE	record
BRV&	53.005	70.050	993.1	124.6		162.0	230.0		279.9	CSE	record
VOST&	52.720	70.970	1036.3	131.3		173.2	240.5		298.4	CSE	record
NVS	54.850	83.266	1229.8	153.6		193.4	275.4		324.9	GS	record
NRI	69.430	88.083	1292.2	159.9			298.9		376.4	GS	record
ELT	53.253	86.277	1494.5	184.9		245.9	334.9		414.9	GS	record
ELT	53.253	86.277	1494.5	186.5						GS	bulletin
SEM	50.400	80.250	1510.4	185.6						GS	bulletin
APA	67.558	33.442	1692.1	214.0						GS	bulletin
MOS	55.738	37.625	1794.8	240.9						GS	bulletin
OBN	55.115	36.568	1889.2	240.9						GS	bulletin
KJF	64.199	27.715	1966.1	243.9						ISC	bulletin
PUL	59.773	30.324	1970.9	246.9						GS	bulletin
SOD	67.371	26.629	1982.1	245.6						ISC	bulletin
UER	51.563	94.087	1999.5	246.9		325.9395			543.9	GS	record
UER	51.563	94.087	1999.5	248.0						GS	bulletin
SUF	62.719	26.151	2078.3	256.0						ISC	bulletin
KHE	80.620	58.050	2123.1	263.9						GS	bulletin
TLG&	43.238	77.225	2171.2	267.6						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/10/80	07:00:00.06	61.75	66.75

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
AAB	43.230	77.230	2172.2	267.9						GS	bulletin
NUR	60.509	24.651	2232.5	272.9						ISC	bulletin
KIR	67.840	20.417	2243.3	275.6						ISC	bulletin
TAS	41.340	69.310	2275.4	277.9						GS	bulletin
PRZ	42.480	78.400	2277.8	278.9						GS	bulletin
TRO	69.632	18.928	2292.5	281.1						ISC	bulletin
UME	63.815	20.237	2332.0		284.0					ISC	bulletin
NRN	41.430	76.000	2342.5	285.4						GS	bulletin
ANR	40.750	72.370	2364.9	288.6						GS	bulletin
PYA	44.033	43.058	2504.1		300.9					GS	bulletin
GAR	39.000	70.320	2540.1		304.5					GS	bulletin
UPP	59.858	17.627	2617.9		311.3					ISC	bulletin
KBS	78.918	11.924	2625.9		311.8					ISC	bulletin
BOD	57.850	114.183	2635.6		308.9					GS	bulletin
SOC	43.583	39.720	2684.8		323.9					GS	bulletin
KHO	37.480	71.530	2717.0		320.1					GS	bulletin
KRV	40.647	46.319	2719.3		320.9					GS	bulletin
TIK	71.630	128.870	2798.8		324.4					GS	bulletin
HFS	60.134	13.696	2800.6		326.9					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/30/82	21:00:00.00	53.80	104.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
IRK	52.242	104.270	173.4			28			48.5	GS	record
IRK	52.242	104.270	173.4	27.8			45.1	52.0		GS	bulletin
TIG	52.770	106.330	185.0			30.4			52.5	GS	record
ARS	51.920	102.430	239.0	36.0		37.5	61.0			GS	record
MOY	51.670	101.000	318.2	47.1				90.2		GS	bulletin
MOY	51.670	101.000	318.2	47.5		50.0	84.0		95.0	GS	record
ORL	52.520	99.830	321.9	47.6					89.0	GS	record
ZAK	50.383	103.283	384.5	54.6				111.0		GS	bulletin
ZAK	50.383	103.283	384.5	54.6		60.0	98.8		107.0	GS	record
BDN	53.700	110.110	392.9	55.0		63.8	98.8		112.0	GS	record
NIZ	55.770	109.550	410.4	58.5		69.2	103.5		117.0	GS	record
KMO	55.880	111.200	508.1	71.0		79.5	127.2		144.5	GS	record
CIT	52.020	113.550	661.6	87.5		107.5	153.5		189.0	GS	record
UER	51.563	94.087	723.4	96.0						GS	bulletin
UER	51.563	94.087	723.4	99.0		117.0	163.2		199.0	GS	record
KHP	49.720	112.370	725.4	95.3		114.0	169.5		203.0	GS	record
BOD	57.850	114.183	772.1	100.5		124.5	177.0		218.0	GS	record
NLT	56.500	115.700	793.7	105.3		133.6	191.0		221.0	GS	record
SKL	55.870	117.380	878.7	116.0		143.5	204.0		252.0	GS	record
CAA	56.900	118.270	957.2	126.0		159.0	227.5		270.5	GS	record
TUP	54.430	119.900	1029.5	134.0		168.0	239.5		294.5	GS	record
TUG	57.290	121.500	1157.6	151.0		190.0	271.0		326.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/30/82	21:00:00.00	53.80	104.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ELT	53.253	86.277	1182.9	154.7						GS	bulletin
ELT	53.253	86.277	1182.9	154.8		191.2	272.0		332.0	GS	record
UURR	55.300	123.160	1236.7	160.0		204.0	275.0		349.0	GS	record
USK	50.937	84.773	1352.1	176.4						GS	bulletin
CLN	56.870	124.900	1353.8	177.2			307.5	338.5	392.0	GS	record
NVS	54.850	83.266	1357.9	176.0				322.3		GS	bulletin
GTA	39.411	99.814	1631.1	209.9						ISC	bulletin
WMQ	43.821	87.695	1631.9	210.3						ISC	bulletin
SEM	50.400	80.250	1671.0	213.0						GS	bulletin
CGD	58.750	130.620	1715.7	217.0	223.7			405.0	488.0	GS	record
YAK	62.016	129.717	1752.4	215.2					494.9	GS	bulletin
YAK	62.016	129.717	1752.4	217.6			381.6	398.6	491.0	GS	record
TIY	37.713	112.434	1895.3	240.0						ISC	bulletin
CN2	43.801	125.448	1905.5	240.5						ISC	bulletin
NRI	69.430	88.083	1924.5	234.2						GS	bulletin
NRI	69.430	88.083	1924.5	234.8				417.0	554.0	GS	record
KHG	62.650	135.550	2062.0	253.4			452.0	470.0	585.0	GS	record
MDJ	44.616	129.592	2098.2	263.3						ISC	bulletin
TIA	36.211	117.124	2195.5	271.6						ISC	bulletin
XAN	34.039	108.921	2224.7	274.6						ISC	bulletin
BTGS	67.651	134.640	2226.4	273.0						GS	record
S21	68.700	134.450	2278.1	276.0						GS	record
AAB	43.230	77.230	2287.3		279.1					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
07/30/82	21:00:00.00	53.80	104.15

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
T11	67.510	136.550	2291.6	280.0	284.0					GS	record
TIK	71.630	128.870	2317.0		280.4					GS	bulletin
TIK	71.630	128.870	2317.0		281.2		489.0	503.0	643.0	GS	record
FRU	42.830	74.620	2478.6		300.0					GS	bulletin
NRN	41.430	76.000	2495.6		301.0					GS	bulletin
CD2	30.910	103.758	2539.4		305.6					ISC	bulletin
KUUR	61.891	147.426	2663.4		316.0				760.0	GS	record
SUU	62.781	148.148	2701.7	334.0	319.0				769.0	GS	record
WHN	30.544	114.350	2707.1		319.0					ISC	bulletin
SVE	56.827	60.637	2734.4		321.2					GS	bulletin
ANR	40.750	72.370	2770.9		321.0					GS	bulletin
ZYRR	65.700	149.820	2803.2		329.3					GS	record
YSS	46.967	142.767	2808.9		327.4					GS	bulletin
SINR	62.086	150.522	2825.1		330.0					GS	record
MA1	60.046	150.730	2854.5		330.8					GS	bulletin
MA1	60.046	150.730	2854.5		332.0					GS	record
MAG	59.554	150.805	2865.6		335.0					GS	record
ARU	56.416	58.570	2868.1		331.4			607.0	841.0	GS	record
ARU	56.416	58.570	2868.1		332.2					GS	bulletin
SEY	62.917	152.417	2918.9		336.2					GS	bulletin
SEY	62.917	152.417	2918.9		336.4				829.0	GS	record
TLA	61.128	152.391	2931.7		339.0					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/04/82	18:00:00.06	69.20	81.65

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	254.9	41.2		44.9	73.3		77.3	GS	record
KHE	80.620	58.050	1423.0	179.9			332.9			GS	bulletin
NVS	54.850	83.266	1600.9	197.1						GS	bulletin
NVS	54.850	83.266	1600.9	197.1		248.1	353.9		441.2	GS	record
SVE	56.827	60.637	1722.8	213.9						GS	bulletin
TIK	71.630	128.870	1741.2	218.4						GS	bulletin
TIK	71.630	128.870	1741.2	218.4			409.9		498.9	GS	record
ELT	53.253	86.277	1792.5	220.9		288.1	397.4			GS	record
ELT	53.253	86.277	1792.5	221.6						GS	bulletin
ARU	56.416	58.570	1824.6	224.9			409.6			GS	bulletin
ARU	56.416	58.570	1824.6	224.9	233.9		405.4	415.9	513.9	GS	record
APA	67.558	33.442	1940.0	238.9				431.4		GS	bulletin
BOD	57.850	114.183	2013.2	247.6						GS	bulletin
BOD	57.850	114.183	2013.2	247.9	251.9		437.4	449.9	578.9	GS	record
NIZ	55.770	109.550	2040.2	251.4			447.9	467.3	579.9	GS	record
USK	50.937	84.773	2040.7	250.1						GS	bulletin
SVB	55.640	109.350	2045.9	250.9	260.4		450.9	463.9		GS	record
KEV	69.755	27.007	2068.7	255.3						ISC	bulletin
UER	51.563	94.087	2071.0	258.4			457.1		590.9	GS	record
UER	51.563	94.087	2071.0	259.7						GS	bulletin
ORL	52.520	99.830	2085.1	259.4			452.4	471.4	594.9	GS	record
KMO	55.880	111.200	2085.6	256.3	259.9		459.9	468.4	592.9	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/04/82	18:00:00.06	69.20	81.65

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SEM	50.400	80.250	2094.9	258.5						GS	bulletin
KVO	56.140	113.050	2125.9	260.9			464.9	477.5	603.9	GS	record
OZE	56.300	113.980	2144.3	262.9	266.9			482.4	602.9	GS	record
NLT	56.500	115.700	2188.3	267.9			467.4	480.9	621.9	GS	record
MOY	51.670	101.000	2201.6	272.5						GS	bulletin
MOY	51.670	101.000	2201.6	272.6	279.4		474.9	498.9	629.9	GS	record
SOD	67.371	26.629	2204.9	270.9						ISC	bulletin
KBS	78.918	11.924	2208.2	271.6						ISC	bulletin
ARS	51.920	102.430	2211.2	271.3	272.9			488.4	635.9	GS	record
IRK	52.242	104.270	2226.9		271.9			500.9		GS	bulletin
IRK	52.242	104.270	2226.9	271.9	274.5		484.9	492.9	635.4	GS	record
TIG	52.770	106.330	2231.8	274.9	272.4		481.4	493.6	636.4	GS	record
CAA	56.900	118.270	2248.0	276.7			488.9	499.4	636.9	GS	record
BDN	53.700	110.110	2256.7	279.9	275.9		486.5	495.5	636.4	GS	record
YAK	62.016	129.717	2284.3		279.5					GS	bulletin
TRO	69.632	18.928	2354.9		285.9					ISC	bulletin
KJF	64.199	27.715	2361.3		285.9					ISC	bulletin
ZAK	50.383	103.283	2392.0		291.9					GS	bulletin
ZAK	50.383	103.283	2392.0		291.9			530.4	683.9	GS	record
KIR	67.840	20.417	2403.8		290.9					ISC	bulletin
SUF	62.719	26.151	2525.5		301.4					ISC	bulletin
TUP	54.430	119.900	2530.1		303.2					GS	bulletin
TUP	54.430	119.900	2530.1		303.9			561.9		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/04/82	18:00:00.06	69.20	81.65

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CIT	52.020	113.550	2532.8		304.4			558.9	714.9	GS	record
PUL	59.773	30.324	2584.1		306.9					GS	bulletin
MOS	55.738	37.625	2632.4		311.9					GS	bulletin
UME	63.815	20.237	2674.1		315.0					ISC	bulletin
KHP	49.720	112.370	2721.0		321.5				703.9	GS	record
OBN	55.115	36.568	2728.2		319.9					GS	bulletin
OBN	55.115	36.568	2728.2		320.4					GS	record
NUR	60.509	24.651	2750.4		321.9					ISC	bulletin
WMQ	43.821	87.695	2845.4		331.4					ISC	bulletin
AAB	43.230	77.230	2901.0		336.7					GS	bulletin
DAG	76.771	-18.655	2951.9		338.0					ISC	bulletin
FRU	42.830	74.620	2962.3		341.4					GS	bulletin
PRZ	42.480	78.400	2979.0		341.9					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/25/84	19:00:00.33	61.90	72.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	860.3	109.7			199.7			GS	bulletin
SVE	56.827	60.637	860.3	109.7		135.7	199.2			GS	record
ARU	56.416	58.570	982.5	124.2		152.7	223.7		267.7	GS	record
NVS	54.850	83.266	1018.2	130.4						GS	bulletin
NVS	54.850	83.266	1018.2	130.4		162.0			280.7	GS	record
NRI	69.430	88.083	1109.2	141.1		178.1	250.1		296.7	GS	record
ELT	53.253	86.277	1277.2	161.2		212.2			371.2	GS	record
SEM	50.400	80.250	1373.7	169.7						GS	bulletin
USK	50.937	84.773	1443.4	180.7						GS	bulletin
UER	51.563	94.087	1754.5	221.7						GS	bulletin
UER	51.563	94.087	1754.5	222.7					472.7	GS	record
APA	67.558	33.442	1909.8	238.7						GS	bulletin
MOY	51.670	101.000	2074.0	259.4						GS	bulletin
MOS	55.738	37.625	2076.8	256.7						GS	bulletin
TLG&	43.238	77.225	2102.3	258.0						CSE	record
FRU	42.830	74.620	2126.8	262.9						GS	bulletin
KEV	69.755	27.007	2175.4					472.7		ISC	bulletin
KEV	69.755	27.007	2175.4	268.5						ISC	bulletin
IRK	52.242	104.270	2194.6	270.1						GS	bulletin
PRZ	42.480	78.400	2199.2	272.3			497.7			GS	bulletin
SOD	67.371	26.629	2201.8					483.7		ISC	bulletin
SOD	67.371	26.629	2201.8	270.5						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/25/84	19:00:00.33	61.90	72.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KJF	64.199	27.715	2213.1				474.7			ISC	bulletin
KJF	64.199	27.715	2213.1	271.3						ISC	bulletin
PUL	59.773	30.324	2244.0	278.7				496.7		GS	bulletin
WMQ	43.821	87.695	2254.2	276.2						ISC	bulletin
ZAK	50.383	103.283	2288.3		280.9					GS	bulletin
NRN	41.430	76.000	2290.5		281.9					GS	bulletin
TAS	41.340	69.310	2293.2		281.3					GS	bulletin
SUF	62.719	26.151	2333.9		284.5					ISC	bulletin
ANR	40.750	72.370	2351.1		286.9					GS	bulletin
KIR	67.840	20.417	2456.5		296.1					ISC	bulletin
TRO	69.632	18.928	2488.5		299.7					ISC	bulletin
SAM	39.660	66.950	2496.5		300.7					GS	bulletin
NUR	60.509	24.651	2497.9				549.7			ISC	bulletin
NUR	60.509	24.651	2497.9		300.2					ISC	bulletin
UME	63.815	20.237	2575.9		307.3					ISC	bulletin
TIK	71.630	128.870	2599.5		309.7					GS	bulletin
DSH	38.570	68.760	2602.8		310.1					GS	bulletin
MIK	54.500	27.833	2669.2		315.7					GS	bulletin
GRO	43.320	45.750	2691.2		319.7					GS	bulletin
KHO	37.480	71.530	2713.7		320.7					GS	bulletin
KBS	78.918	11.924	2723.2		380.7					ISC	bulletin
PYA	44.033	43.058	2739.4		321.7					GS	bulletin
VAN	37.948	58.108	2830.4		329.7					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/25/84	19:00:00.33	61.90	72.10

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UPP	59.858	17.627	2879.3		333.2					ISC	bulletin
TI2	41.730	44.750	2884.9		334.1					GS	bulletin
YAK	62.016	129.717	2922.4		335.9					GS	bulletin
KRV	40.647	46.319	2927.2		336.7					GS	bulletin
ANN	44.800	37.433	2929.4		334.7					GS	bulletin
BKR	41.733	43.517	2936.1		339.7					GS	bulletin
MHI	36.308	59.472	2976.5		341.7					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/17/84	21:00:00.03	55.834	87.526

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NVS	54.850	83.266	291.4	44.5		48.0			81.5	GS	record
NVS	54.850	83.266	291.4	44.8					80.8	GS	bulletin
UER	51.563	94.087	642.2	87.6		103.0	153.2		181.2	GS	record
UER	51.563	94.087	642.2	88.0			154.4			GS	bulletin
SEM	50.400	80.250	775.1	103.8						GS	bulletin
ORL	52.520	99.830	881.9	121.5		144.2	200.0		249.0	GS	record
MOY	51.670	101.000	999.4	134.2		161.2	234.2		280.0	GS	record
ARS	51.920	102.430	1069.1	142.0		170.3	235.0		297.0	GS	record
TLY	51.680	103.640	1154.8	155.0		185.5			326.0	GS	record
IRK	52.242	104.270	1163.3	153.2			281.0			GS	bulletin
IRK	52.242	104.270	1163.3	154.0					332.0	GS	record
ZAK	50.383	103.283	1212.3	159.2			277.0			GS	bulletin
ZAK	50.383	103.283	1212.3	160.0		197.5	277.5		339.0	GS	record
TIG	52.770	106.330	1265.5	163.0	168.0				357.0	GS	record
WMQ	43.821	87.695	1335.0					306.0		ISC	bulletin
WMQ	43.821	87.695	1335.0	172.8						ISC	bulletin
SVB	55.640	109.350	1364.6	172.0		228.0	305.0	336.0	386.0	GS	record
NIZ	55.770	109.550	1374.6	174.3	175.8		308.8	350.0	394.0	GS	record
SYV	53.650	110.000	1460.1	185.5	194.8	239.0			408.0	GS	record
NRI	69.430	88.083	1515.2	186.8	197.0		332.5	358.0	430.0	GS	record
AAB	43.230	77.230	1582.2	199.4						GS	bulletin
KVO	56.140	113.050	1583.5	199.5			356.0	376.0	453.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/17/84	21:00:00.03	55.834	87.526

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
AAA	43.267	76.950	1587.9	202.4						GS	bulletin
PRZ	42.480	78.400	1622.7	217.0						GS	bulletin
BOD	57.850	114.183	1630.6	202.1						GS	bulletin
BOD	57.850	114.183	1630.6	202.8			356.0	386.5	454.0	GS	record
OZE	56.300	113.980	1637.5	205.5			365.0	388.0	465.0	GS	record
SVE	56.827	60.637	1655.4	209.6			378.0			GS	bulletin
SVE	56.827	60.637	1655.4	215.5	209.5		367.5		454.0	GS	record
FRU	42.830	74.620	1716.0	216.0			381.6			GS	bulletin
NLT	56.500	115.700	1738.6	217.0	227.0		379.0	408.0	497.0	GS	record
CIT	52.020	113.550	1748.9	222.5					496.0	GS	record
ARU	56.416	58.570	1787.7	224.0	231.5		397.0	408.0	497.0	GS	record
ARU	56.416	58.570	1787.7	225.0			397.0			GS	bulletin
KHP	49.720	112.370	1795.7	228.4	233.5			429.0	506.5	GS	record
SKL	55.870	117.380	1854.2	231.0				428.0	528.0	GS	record
CAA	56.900	118.270	1886.7	234.0	240.0			431.0	536.0	GS	record
ANR	40.750	72.370	2007.7	251.7			450.3			GS	bulletin
GTA	39.411	99.814	2037.1	255.5						ISC	bulletin
TUP	54.430	119.900	2050.7	257.0	259.8				591.0	GS	record
TUP	54.430	119.900	2050.7	257.2						GS	bulletin
TUG	57.290	121.500	2072.3	256.0			463.0	471.0	600.0	GS	record
TAS	41.340	69.310	2083.2	258.0						GS	bulletin
USZ	56.550	121.600	2094.1	258.7					597.0	GS	record
UURR	55.300	123.160	2222.8		274.0					GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/17/84	21:00:00.03	55.834	87.526

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CLN	56.870	124.900	2283.5	276.5	279.2			509.0	654.0	GS	record
SAM	39.660	66.950	2348.5	286.0						GS	bulletin
BTO	40.598	110.018	2356.7		287.7					ISC	bulletin
KUL	37.900	69.780	2391.4		289.2					GS	bulletin
YAK	62.016	129.717	2475.5		296.2			532.0		GS	bulletin
YAK	62.016	129.717	2475.5		296.5		535.5	546.0	703.5	GS	record
LZH	36.087	103.844	2516.1		303.0					ISC	bulletin
CGD	58.750	130.620	2571.7		306.5				738.0	GS	record
TIK	71.630	128.870	2603.9		309.0			561.5		GS	bulletin
TIK	71.630	128.870	2603.9		309.2			575.5	812.0	GS	record
BTGS	67.651	134.640	2723.2		320.0			579.0	767.0	GS	record
S21	68.700	134.450	2728.9		320.5					GS	record
BJI	40.040	116.175	2731.6		321.5					ISC	bulletin
TIY	37.713	112.434	2738.1		322.8					ISC	bulletin
KHG	62.650	135.550	2770.8		323.5				789.0	GS	record
T11	67.510	136.550	2803.1		328.0					GS	record
LSA	29.700	91.150	2913.5		338.6					ISC	bulletin
DDI	30.323	78.056	2927.2		337.1					ISC	bulletin
VAN	37.948	58.108	2953.1		339.8					GS	bulletin
NEZR	62.490	139.098	2953.9		340.0					GS	record
CN2	43.801	125.448	2987.0		341.4					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/22/88	16:20:00.07	66.280	78.491

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.400	88.100	532.7				127.9			ISC	bulletin
NRI	69.400	88.100	532.7	73.7						ISC	bulletin
NRI	69.430	88.083	534.1	73.8		83.8	133.4		155.8	GS	record
NVS	54.850	83.266	1298.8	160.9		206.9	291.9		353.9	GS	record
SVE	56.827	60.637	1407.5	173.9			306.9	333.9	382.9	GS	record
SVE	56.827	60.637	1407.5	174.9	183.9		313.9		382.9	GS	record
SVE	56.810	60.637	1409.1	175.9						ISC	bulletin
ELT	53.253	86.277	1512.5	186.9						GS	bulletin
ELT	53.253	86.277	1512.5	187.7			337.9			GS	record
ELT	53.250	86.267	1512.6	186.9						ISC	bulletin
ARU	56.430	58.563	1516.8					342.9		ISC	bulletin
ARU	56.430	58.563	1516.8	188.9						ISC	bulletin
ARU	56.416	58.570	1517.8	189.9			341.9			GS	record
KHE	80.617	58.050	1703.8	212.9						ISC	bulletin
KHE	80.620	58.050	1704.1	212.9						GS	bulletin
BAYA&	50.810	75.515	1730.6	210.0	232.0		381.4	407.0	479.4	CSE	record
KARS&	49.952	81.075	1823.7	224.9	240.1		408.3	421.0	522.9	CSE	record
UER	51.563	94.087	1856.6	229.9						GS	record
KAR1&	49.375	75.400	1890.2	233.6	246.7		422.0	436.5	531.4	CSE	record
ORL	52.520	99.830	1932.9	240.9	246.9		421.4	438.4	554.5	GS	record
APA	67.558	33.442	1933.1	239.6						GS	bulletin
APA	67.550	33.333	1937.8	239.6						ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/22/88	16:20:00.07	66.280	78.491

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NIZ	55.770	109.550	2012.9	247.1	249.6		438.4	452.9	569.9	GS	record
SVB	55.640	109.350	2015.3	247.4			442.9	458.9	573.9	GS	record
TIK	71.633	128.867	2037.1					448.9		ISC	bulletin
TIK	71.633	128.867	2037.1	251.9						ISC	bulletin
TIK	71.630	128.870	2037.3	251.9				448.9		GS	bulletin
TIK	71.630	128.870	2037.3	251.9	254.9			447.9	587.9	GS	record
BOD	57.850	114.183	2050.3	250.9	258.1		451.4	462.9	583.9	GS	record
MOY	51.670	101.000	2054.5	255.9	259.9			466.9	583.9	GS	record
KMO	55.880	111.200	2073.8	254.9	258.2		458.9	470.4	581.9	GS	record
ARS	51.920	102.430	2079.7	256.9	263.4		457.9	467.9	599.9	GS	record
IRK	52.272	104.310	2114.1					467.3		ISC	bulletin
IRK	52.272	104.310	2114.1	258.9						ISC	bulletin
IRK	52.242	104.270	2115.4	259.2				467.3		GS	bulletin
IRK	52.242	104.270	2115.4	259.4	264.4		453.9	467.9	595.9	GS	record
KEV	69.755	27.007	2118.8	260.7						ISC	bulletin
KVO	56.140	113.050	2132.5	261.5	266.9		467.9	482.9	607.9	GS	record
TIG	52.770	106.330	2144.2	264.9	268.9		473.9	487.9	618.9	GS	record
TLY	51.680	103.640	2145.6	262.9	271.9		474.9	486.4	619.9	GS	record
OZE	56.300	113.980	2160.2	264.4	269.4		475.4	485.9	616.4	GS	record
UKT	55.480	113.620	2210.3	269.4	273.9		484.4	493.9	632.9	GS	record
SYV	53.650	110.000	2211.8	269.9	277.9		481.4	494.9	631.9	GS	record
SOD	67.371	26.629	2215.3	271.3						ISC	bulletin
NLT	56.500	115.700	2219.9	270.9	273.9		485.9	502.9	629.9	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/22/88	16:20:00.07	66.280	78.491

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZAK	50.383	103.283	2257.5	278.2						ISC	bulletin
ZAK	50.383	103.283	2257.5		278.2					GS	bulletin
ZAK	50.383	103.283	2257.5	278.9			494.9	505.9	642.9	GS	record
CAA	56.900	118.270	2303.0	280.9			496.9	510.9	658.9	GS	record
KJF	64.199	27.715	2319.2		282.1					ISC	bulletin
SKL	55.870	117.380	2343.3		284.9			519.9	670.9	GS	record
TRO	69.632	18.928	2421.5		293.0					ISC	bulletin
KBS	78.918	11.924	2421.9		296.9					ISC	bulletin
KIR	67.840	20.417	2439.9		294.1					ISC	bulletin
SUF	62.719	26.151	2469.9		297.1					ISC	bulletin
CIT	52.020	113.550	2501.6		299.9			536.9		GS	bulletin
CIT	52.020	113.550	2501.6		300.9				715.9	GS	record
CIT	52.000	113.600	2505.4				536.9			ISC	bulletin
CIT	52.000	113.600	2505.4		299.9					ISC	bulletin
OBN	55.167	36.600	2532.0		303.7					ISC	bulletin
OBN	55.115	36.568	2537.5		303.7					GS	bulletin
OBN	55.115	36.568	2537.5		304.4			559.9	713.9	GS	record
WMQ	43.821	87.695	2560.4		305.9					ISC	bulletin
TLG	43.267	77.383	2560.9		305.9					ISC	bulletin
AAA	43.272	76.947	2561.2				550.9			ISC	bulletin
AAA	43.272	76.947	2561.2		307.9					ISC	bulletin
AAA	43.267	76.950	2561.7		307.9			550.9		GS	bulletin
TLG&	43.238	77.225	2564.4	306.0						CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
08/22/88	16:20:00.07	66.280	78.491

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
AAB	43.230	77.230	2565.3		305.9					GS	bulletin
TUP	54.430	119.900	2570.1	313.9	306.9			560.9	735.9	GS	record
FRU	42.833	74.617	2619.0		312.7					ISC	bulletin
FRU	42.830	74.620	2619.3		312.7					GS	bulletin
PRZ	42.483	78.400	2647.0		314.9					ISC	bulletin
PRZ	42.480	78.400	2647.3		315.4					GS	bulletin
UME	63.815	20.237	2656.6		313.9					ISC	bulletin
KHP	49.720	112.370	2661.6		316.4			564.9	761.9	GS	record
NUR	60.509	24.651	2675.2		316.0					ISC	bulletin
LOF	68.131	13.542	2686.7		303.4					ISC	bulletin
NRN	41.433	76.000	2767.8				578.9			ISC	bulletin
NRN	41.433	76.000	2767.8		325.9					ISC	bulletin
NRN	41.430	76.000	2768.1		326.3			578.9		GS	bulletin
TAS	41.340	69.310	2832.0		329.9					GS	bulletin
TAS	41.325	69.295	2833.8		329.9					ISC	bulletin
ANR	40.755	72.360	2864.4		332.9					ISC	bulletin
ANR	40.750	72.370	2864.9		333.4					GS	bulletin
KSH	39.517	75.923	2980.4		344.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/16/64	06:00:00.2	49.8087	78.1334

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SEM	50.400	80.250	164.9	28.2			47.2			GS	record
KZAG&	45.375	78.733	494.5	69.7		81.90078	124.1		142.0	CSE	record
ILI&	43.900	77.122	660.6	88.9		108.4008	155.0		183.4	CSE	record
ILI	43.860	77.032	665.9	89.7						GS	bulletin
KEBZ&	51.753	87.104	667.5	92.1		107.2008	161.6		182.5	CSE	record
AABK	43.733	77.216	678.3	98.4					207.2	GS	bulletin
ELT	53.253	86.277	681.6	92.8						GS	bulletin
ELT	53.253	86.277	681.6	93.3		110.3008	163.6			GS	record
CHIL&	43.567	78.416	693.4	94.6		114.3008	166.5		198.6	CSE	record
CHL	43.527	78.374	697.8	94.6					197.3	GS	bulletin
AAA	43.267	76.950	732.0	98.8			174.8		205.8	GS	bulletin
CUR	50.097	88.352	732.8	100.0			176.2			GS	bulletin
KRS	43.183	76.400	747.5	100.1						GS	bulletin
KRM	42.987	78.275	757.5	101.5			212.1		212.1	GS	bulletin
KRM&	42.980	78.270	758.3	100.5		122.2008	178.6		215.9	CSE	record
KRS&	43.280	75.170	759.5	101.1		123.1008	182.0		218.3	CSE	record
PRZ	42.480	78.400	813.9	109.7					232.7	GS	bulletin
PRZ&	42.480	78.600	814.5	109.7		138.2008	193.9		233.5	CSE	record
BOMR&	42.500	75.930	829.0	111.3		141.4008	199.2		240.5	CSE	record
RYB	42.280	76.110	850.3	124.0			202.0			GS	bulletin
TASH&	52.733	89.933	883.4	116.8		137.1008	207.4		246.2	CSE	record
SHEK&	51.174	90.698	902.5	119.3		142.9008	213.3		247.6	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/16/64	06:00:00.2	49.8087	78.1334

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KIBI&	52.500	90.433	909.0	128.9		164.9008	229.5		281.7	CSE	record
NRN	41.430	76.000	944.8	128.8			233.8		271.8	GS	record
NRN&	41.420	75.800	948.7	126.8		158.9008	223.5		269.1	CSE	record
JOI&	52.767	91.317	974.3	127.6		162.1008	228.6		278.3	CSE	record
CHAD&	51.374	91.823	982.6	131.0		164.0008	228.9		280.0	CSE	record
KHAN&	50.721	92.248	1009.1	131.6		167.5008	233.6		284.4	CSE	record
CHM	42.319	69.603	1059.8	140.5			238.3			GS	record
KHAI&	51.572	93.065	1070.3	139.1		174.1008	240.7		298.4	CSE	record
VUSI&	52.217	93.000	1074.1	140.1			242.9		300.5	CSE	record
CHER&	53.139	92.926	1089.2	144.5			245.1		301.0	CSE	record
NAM	41.000	71.660	1100.1	153.4			271.4		309.4	GS	record
ANR	40.750	72.370	1101.5	144.4			268.8		317.8	GS	record
UER	51.563	94.087	1140.9	150.0			267.8		323.8	GS	record
FRG	40.370	71.780	1159.7	149.3			286.8		333.3	GS	bulletin
TAS	41.340	69.310	1163.2	150.8			258.8		334.3	GS	bulletin
TAS	41.340	69.310	1163.2	152.3			283.9			GS	record
DZT	39.220	71.220	1295.7	166.0						GS	bulletin
MUR	38.370	73.930	1312.6	173.8					375.8	GS	record
GAR	39.000	70.320	1349.3	172.8						GS	bulletin
SVE	56.827	60.637	1396.2	177.2			310.8		376.8	GS	record
OBG	38.720	69.720	1399.6	180.8						GS	record
DSH	38.570	68.760	1452.0	187.3					415.3	GS	bulletin
KHO	37.480	71.530	1466.4	190.1						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/16/64	06:00:00.2	49.8087	78.1334

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KUL	37.900	69.780	1479.8	190.5					431.5	GS	record
ARS	51.920	102.430	1717.0	220.2				392.0	492.1	GS	record
ZAK	50.383	103.283	1790.5	228.1				422.5		GS	record
WRS	34.150	71.400	1822.2	228.3						ISC	bulletin
IRK	52.242	104.270	1841.8	235.8				423.8	526.8	GS	record
TIG	52.770	106.330	1979.6	247.4				447.2	565.4	GS	record
KAB	52.050	106.650	2005.5					461.9	555.8	GS	record
KYA	50.370	106.450	2013.4	249.7				464.6	568.8	GS	record
ASH	37.950	58.350	2051.2	253.8			450.8			GS	record
VAN	37.948	58.108	2066.1	257.1			451.1			GS	record
KAT	39.028	56.270	2098.4	263.8				480.8	552.8	GS	record
BGZ	53.620	109.630	2197.1	270.3					634.3	GS	record
NIZ	55.770	109.550	2197.5	270.3				504.5	633.3	GS	record
ALL	54.680	110.810	2272.7	280.6	277.7				652.2	GS	record
NDI	28.683	77.217	2343.1		284.8					ISC	bulletin
QUE	30.188	66.950	2369.0				419.8			ISC	bulletin
QUE	30.188	66.950	2369.0		287.9					ISC	bulletin
UKT	55.480	113.620	2452.3	305.9	295.9			543.4	700.4	GS	record
BOD	57.850	114.183	2499.0		298.9					GS	bulletin
BOD	57.850	114.183	2499.0	304.6	298.8			546.8	719.3	GS	record
GRO	43.320	45.750	2560.3		309.8			545.8		GS	record
NLT	56.500	115.700	2582.7	322.1	308.6			551.7	736.7	GS	record
CHA	26.833	87.167	2661.1		315.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/16/64	06:00:00.2	49.8087	78.1334

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TEH	35.738	51.386	2662.7		318.3					ISC	bulletin
KRV	40.647	46.319	2669.7		316.3					GS	bulletin
SKL	55.870	117.380	2687.8		318.0					GS	record
CAA	56.900	118.270	2740.2	331.4	322.4				780.4	GS	record
GRS	39.500	46.330	2740.3		324.2			588.2		GS	record
MOS	55.738	37.625	2767.5		321.8				771.8	GS	bulletin
STE	41.000	44.370	2787.2		327.6					GS	bulletin
BKR	41.733	43.517	2806.0		330.0			591.6		GS	record
AKH	41.410	43.480	2827.0		330.8					GS	bulletin
ABS	41.750	42.810	2855.7		333.8					GS	bulletin
TUP	54.430	119.900	2860.6		332.0				803.6	GS	record
ZUG	42.400	41.800	2892.5		350.8					GS	bulletin
SHL	25.567	91.883	2935.7		336.8					ISC	bulletin
SOC	43.583	39.720	2980.4		343.1			621.8		GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/21/65	04:58:00.0	49.8192	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KZAG&	45.375	78.733	496.1	70.0		82	124.2		141.9	CSE	record
ILI&	43.900	77.122	661.2	88.7		108.5	155.0		183.2	CSE	record
NVS	54.850	83.266	661.7	90.0		108	158.0			GS	record
ILI	43.860	77.032	666.4	88.7					180.2	GS	bulletin
KEBZ&	51.753	87.104	671.7	92.5		113.2	163.0		196.4	CSE	record
ELT	53.253	86.277	684.9	94.0			163.8			GS	record
CHI3&	43.527	78.373	699.1	94.8		114.5	166.4		198.0	CSE	record
CHL	43.527	78.374	699.1	94.8					197.1	GS	bulletin
CHAR&	43.496	79.217	707.6	95.5		115.4	167.0		198.2	CSE	record
CHI2&	43.438	78.413	709.1	95.6		115.7	167.1		198.3	CSE	record
AAB	43.230	77.230	734.4	97.9					207.4	GS	bulletin
CUR	50.097	88.352	737.7	100.8		120.8	177.8		213.3	GS	record
CUR	50.097	88.352	737.7	100.9			177.8			GS	bulletin
KRS	43.183	76.400	747.8	94.1						GS	bulletin
KRM	42.987	78.275	758.8	101.9					217.8	GS	bulletin
KRS&	43.280	75.170	759.0	100.5		122.8	179.1		214.2	CSE	record
KRM&	42.980	78.270	759.5	100.0		122	178.4		212.8	CSE	record
ORTO&	42.950	78.770	764.6	102.5		123	179.7		214.9	CSE	record
NARY&	43.050	80.271	770.4	104.0		126.1	182.3		216.0	CSE	record
PRZ	42.480	78.400	815.3	110.2					230.7	GS	bulletin
FRU	42.830	74.620	819.8	108.0		129	191.0		233.0	GS	bulletin
FRU	42.830	74.620	819:8	109.5		139.5	191.0		233.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/21/65	04:58:00.0	49.8192	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BOMR&	42.500	75.930	829.0	110.3		139.3	200.7		240.7	CSE	record
KIBI&	52.500	90.433	913.1	130.3		161.7	228.0		279.0	CSE	record
NRN	41.430	76.000	945.0	126.5						GS	bulletin
NRN	41.430	76.000	945.0	130.0		163.5	234.0		269.0	GS	record
NRN&	41.420	75.800	948.8	126.0		157.3	222.4		268.7	CSE	record
KAZA&	41.450	73.970	981.9	129.2		163.3	231.5		283.6	CSE	record
KBKK&	52.917	91.483	993.4	130.3		164.2	232.7		285.7	CSE	record
KZUR&	41.430	73.280	1002.6	128.5		162	230.7		280.4	CSE	record
RYAZ&	41.470	72.280	1029.7	138.3		169.1	241.8		292.4	CSE	record
CHM	42.319	69.603	1057.3	140.0			248.2		304.0	GS	record
CHM	42.319	69.603	1057.3	141.0			250.0		290.0	GS	bulletin
KZDZ&	41.250	71.980	1062.3	141.0			246.0		299.3	CSE	record
TERS&	41.520	71.130	1066.7	141.0			246.4		299.6	CSE	record
NAM	41.000	71.660	1098.6	144.0			246.0		314.0	GS	bulletin
ANR	40.750	72.370	1100.4	144.0		180.5	252.8		308.0	GS	record
ANR	40.750	72.370	1100.4	145.0			275.0		332.0	GS	bulletin
UER	51.563	94.087	1145.4	149.6		190.8	280.0		327.0	GS	record
FRG	40.370	71.780	1158.4	151.0			277.0		333.5	GS	bulletin
TAS	41.340	69.310	1160.9	150.0			277.0		316.0	GS	bulletin
TAS	41.340	69.310	1160.9	150.5					331.0	GS	record
DZT	39.220	71.220	1294.5	166.3						GS	bulletin
MUR	38.370	73.930	1312.3	172.9					371.0	GS	bulletin
GAR	39.000	70.320	1347.8	172.9						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/21/65	04:58:00.0	49.8192	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	1391.6	178.0			313.0		395.0	GS	record
SAM	39.660	66.950	1426.6	182.0						GS	bulletin
DSH	38.570	68.760	1450.1	184.4					411.4	GS	bulletin
KHO	37.480	71.530	1465.5	189.1			339.1			GS	bulletin
KUL	37.900	69.780	1478.3	191.2					420.4	GS	bulletin
MOY	51.670	101.000	1623.7	209.0	216.0				459.0	GS	bulletin
MOY	51.670	101.000	1623.7	209.7				370.1	457.5	GS	record
ARS	51.920	102.430	1721.4	220.8					493.1	GS	record
ZAK	50.383	103.283	1795.2	227.5				410.0	513.0	GS	record
ZAK	50.383	103.283	1795.2	227.9				422.6	514.3	GS	bulletin
IRK	52.242	104.270	1846.2	236.0						GS	bulletin
TIG	52.770	106.330	1983.9	248.9					570.0	GS	record
KYA	50.370	106.450	2018.0	253.5						GS	bulletin
ASH	37.950	58.350	2047.6	257.5						GS	bulletin
ASH	37.950	58.350	2047.6	258.8			456.0			GS	record
VAN	37.948	58.108	2062.4	255.7						GS	record
KAT	39.028	56.270	2094.4	262.2			473.6		605.0	GS	record
KAT	39.028	56.270	2094.4	263.0	272.0		488.0		606.0	GS	bulletin
BGZ	53.620	109.630	2201.3		270.5				631.6	GS	record
NRI	69.430	88.083	2248.0		276.4			512.4		GS	record
NRI	69.430	88.083	2248.8		275.0			503.0		GS	record
ALL	54.680	110.810	2276.7	283.7				508.2	654.7	GS	record
UKT	55.480	113.620	2456.1		296.4				699.4	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/21/65	04:58:00.0	49.8192	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BOD	57.850	114.183	2502.5		298.1					GS	bulletin
BOD	57.850	114.183	2502.5		298.5				731.1	GS	record
NLT	56.500	115.700	2586.4		308.8					GS	record
KRV	40.647	46.319	2665.0		316.0					GS	record
KRV	40.647	46.319	2665.0	321.5	316.0					GS	bulletin
SKL	55.870	117.380	2691.6		319.4					GS	record
DUS	42.080	44.700	2697.1		320.0					GS	bulletin
GRS	39.500	46.330	2735.7		324.0					GS	record
GRS	39.500	46.330	2735.7	329.0	323.0					GS	bulletin
GOR	41.980	44.130	2743.4		323.2					GS	record
CAA	56.900	118.270	2743.8		323.0				783.6	GS	record
MHV	54.950	37.770	2759.7		323.5			588.0	786.5	GS	record
MOS	55.738	37.625	2762.6		323.0					GS	bulletin
MOS	55.738	37.625	2762.6		323.4				768.6	GS	record
STE	41.000	44.370	2782.4		328.4					GS	bulletin
BKR	41.733	43.517	2801.1		328.0			600.0		GS	record
BKR	41.733	43.517	2801.1		329.2					GS	bulletin
AKH	41.410	43.480	2822.1		331.0					GS	bulletin
ABS	41.750	42.810	2850.8		333.0					GS	bulletin
TUP	54.430	119.900	2864.6		332.0					GS	bulletin
TUP	54.430	119.900	2864.6		333.3				822.8	GS	record
KPR	43.680	40.200	2955.8		339.8		650.0			GS	record
KPR	43.680	40.200	2955.8		340.0					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/21/65	04:58:00.0	49.8192	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SOC	43.583	39.720	2975.3		339.0		646.0			GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/20/66	05:50:00.3	49.7616	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KZAG&	45.375	78.733	489.8	69.1		81.8	124.0		141.9	CSE	record
ILI&	43.900	77.122	654.8	87.8		108.3	154.8		183.3	CSE	record
BRV	53.083	70.250	656.1	87.9		101.7	155.7		186.7	GS	bulletin
ELT	53.253	86.277	688.8	94.0						GS	record
ELT	53.253	86.277	688.8	94.4						GS	bulletin
CHI3&	43.527	78.373	692.7	95.4		114.7	166.7		198.3	CSE	record
CHL	43.527	78.374	692.7	93.7					191.3	GS	bulletin
CHAR&	43.496	79.217	701.3	94.5		114.6	166.7		198.3	CSE	record
CHI2&	43.438	78.413	702.7	93.9		114.6	166.5		198.2	CSE	record
AAA	43.267	76.950	726.2	97.9					204.9	GS	bulletin
AAB	43.230	77.230	728.0	97.5		116.1	168.3		206.1	GS	bulletin
CUR	50.097	88.352	738.4	100.7			175.7			GS	record
CUR	50.097	88.352	738.4	101.0						GS	bulletin
KRS	43.183	76.400	741.5	99.5						GS	bulletin
KRM	42.987	78.275	752.4	100.9					212.3	GS	bulletin
KRS&	43.280	75.170	752.9	100.6		122.2	178.9		216.2	CSE	record
KRM&	42.980	78.270	753.1	100.5		122.0	178.4		215.7	CSE	record
ORTO&	42.950	78.770	758.2	101.2		122.4	179.1		216.2	CSE	record
NARY&	43.050	80.271	764.2	102.3		124.3	182.7		218.4	CSE	record
PRZ	42.480	78.400	808.9	109.3		119.8	200.8		228.8	GS	bulletin
FRU	42.830	74.620	813.7	108.2		133.2	189.2		225.7	GS	record
RYB	42.280	76.110	844.2	112.7					234.2	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/20/66	05:50:00.3	49.7616	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UZUN&	41.970	72.520	965.3	126.4		156.8	221.8		267.1	CSE	record
KAZA&	41.450	73.970	975.9	131.5		164.6	231.5		283.4	CSE	record
KZUR&	41.430	73.280	996.7	128.0		162.3	230.3		279.8	CSE	record
KARA&	41.620	72.580	998.8	128.4		162.6	230.5		280.3	CSE	record
ARKI&	41.770	71.970	1004.8	131.4		164.5	231.2		283.0	CSE	record
RYAZ&	41.470	72.280	1024.1	137.8		169.5	241.5		292.8	CSE	record
CHM	42.319	69.603	1052.5	136.7		163.7	248.7		306.7	GS	bulletin
CHM	42.319	69.603	1052.5	136.7		168.7	241.3		307.7	GS	record
KZDZ&	41.250	71.980	1056.6	140.3			244.4		298.4	CSE	record
TERS&	41.520	71.130	1061.3	141.2			245.8		299.0	CSE	record
UER	51.563	94.087	1147.1	149.7		187.7	263.2		322.2	GS	record
FRG	40.370	71.780	1152.7	150.2			273.4		332.7	GS	record
FRG	40.370	71.780	1152.7	150.4			275.9		325.4	GS	bulletin
TAS	41.340	69.310	1156.0	148.7			261.7		330.2	GS	bulletin
TAS	41.340	69.310	1156.0	150.5			267.5		329.7	GS	record
DZT	39.220	71.220	1288.8	165.2				315.5		GS	bulletin
MUR	38.370	73.930	1306.2	172.5				342.4		GS	bulletin
GAR	39.000	70.320	1342.3	171.7						GS	bulletin
SVE	56.827	60.637	1395.8	177.7			309.7			GS	bulletin
SVE	56.827	60.637	1395.8	177.7			309.7		394.7	GS	record
SAM	39.660	66.950	1421.8	180.9			321.7	335.7	411.7	GS	record
SAM	39.660	66.950	1421.8	181.7			314.2	350.7	419.7	GS	bulletin
DSH	38.570	68.760	1444.8	183.7					417.7	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/20/66	05:50:00.3	49.7616	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KHO	37.480	71.530	1459.6	188.3				353.4		GS	bulletin
KUL	37.900	69.780	1472.7	187.8				358.7	430.4	GS	bulletin
MOY	51.670	101.000	1625.5	209.7				368.2	462.7	GS	record
MOY	51.670	101.000	1625.5	209.7	216.7			421.7	466.7	GS	bulletin
ARS	51.920	102.430	1723.3	220.8					493.2	GS	record
ZAK	50.383	103.283	1796.5	228.1			392.1	416.6	515.9	GS	record
ZAK	50.383	103.283	1796.5	228.3				423.9	507.7	GS	bulletin
WRS	34.150	71.400	1815.6	225.4						ISC	bulletin
IRK	52.242	104.270	1848.2	233.7				431.7	527.7	GS	bulletin
MNL	33.147	73.750	1876.6	235.3						ISC	bulletin
TIG	52.770	106.330	1986.1	247.8				443.7	567.6	GS	record
KAB	52.050	106.650	2011.9	252.0					554.7	GS	bulletin
KYA	50.370	106.450	2019.4	253.7	260.7			460.7	575.7	GS	bulletin
LAH	31.550	74.333	2043.2	254.7						ISC	bulletin
ASH	37.950	58.350	2044.1	253.7				469.7	583.7	GS	record
ASH	37.950	58.350	2044.1	254.2			469.7		583.7	GS	bulletin
VAN	37.948	58.108	2059.0	255.2			454.2			GS	record
KAT	39.028	56.270	2091.6	258.7	261.7					GS	bulletin
KAT	39.028	56.270	2091.6	263.7				476.2	596.7	GS	record
MSH	36.311	59.588	2107.4	263.7						ISC	bulletin
BGZ	53.620	109.630	2203.8	270.4	274.9			497.4	622.9	GS	record
NIZ	55.770	109.550	2204.4	271.7				500.2	626.4	GS	record
NRI	69.430	88.083	2255.0		276.5			504.5	629.5	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/20/66	05:50:00.3	49.7616	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	2255.1	276.2				504.2	628.7	GS	record
ALL	54.680	110.810	2279.5	277.7				506.1	651.1	GS	record
NDI	28.683	77.217	2337.7				521.7			ISC	bulletin
NDI	28.683	77.217	2337.7		284.7					ISC	bulletin
QUE	30.188	66.950	2362.1				530.7			ISC	bulletin
QUE	30.188	66.950	2362.1		286.7					ISC	bulletin
MAK	42.961	47.505	2447.9		296.2			542.7	695.7	GS	record
UKT	55.480	113.620	2459.2		297.4				696.8	GS	record
BOD	57.850	114.183	2506.1		298.7				720.7	GS	bulletin
GRO	43.320	45.750	2555.0		306.7					GS	bulletin
NLT	56.500	115.700	2589.8		309.8				746.1	GS	record
TEH	35.738	51.386	2655.9		317.7					ISC	bulletin
KRV	40.647	46.319	2663.9		314.7					GS	bulletin
KRV	40.647	46.319	2663.9		315.2			568.7	762.7	GS	record
TI2	41.730	44.750	2712.4		320.9					GS	bulletin
PYA	44.033	43.058	2713.0		328.1					GS	bulletin
GRS	39.500	46.330	2734.3		323.2		594.2		784.2	GS	record
GRS	39.500	46.330	2734.3		323.7					GS	bulletin
GOR	41.980	44.130	2742.8		323.1		597.1		781.2	GS	record
CAA	56.900	118.270	2747.2		323.2				782.3	GS	record
MHV	54.950	37.770	2762.7		323.1			595.7	782.7	GS	record
MOS	55.738	37.625	2765.7		323.2			589.7	773.7	GS	record
MOS	55.738	37.625	2765.7		323.7			585.7	763.7	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/20/66	05:50:00.3	49.7616	78.0636

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BKR	41.733	43.517	2800.5		327.5					GS	bulletin
BKR	41.733	43.517	2800.5		329.7			597.7		GS	record
NAK	39.211	45.412	2817.3		331.7					GS	bulletin
AKH	41.410	43.480	2821.5		329.7					GS	bulletin
ERE	40.170	44.470	2824.0		329.7					GS	bulletin
OBN	55.115	36.568	2837.6		328.7				791.7	GS	bulletin
OBN	55.115	36.568	2837.6		329.1			604.7	797.7	GS	record
ABS	41.750	42.810	2850.3		332.7					GS	bulletin
TUP	54.430	119.900	2867.5		331.7				813.7	GS	bulletin
TUP	54.430	119.900	2867.5		332.5				823.9	GS	record
ZUG	42.400	41.800	2887.2		347.7					GS	bulletin
SHL	25.567	91.883	2933.6		336.7					ISC	bulletin
KPR	43.680	40.200	2955.9		338.7					GS	bulletin
KPR	43.680	40.200	2955.9		339.7			650.2		GS	record
SOC	43.583	39.720	2975.5		342.2					GS	record
SOC	43.583	39.720	2975.5		342.7					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/29/66	06:58:00.5	49.8344	78.0734

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KZAG&	45.375	78.733	489.8	69.8		81.8	123.6		141.2	CSE	record
ILI&	43.900	77.122	654.8	88.7		107.8	154.1		182.4	CSE	record
ILI	43.860	77.032	660.0	88.2					183.2	GS	bulletin
NVS	54.850	83.266	667.3	88.0		108.0	156.0		186.3	GS	record
ELT	53.253	86.277	688.8	92.7			162.3		193.5	GS	record
ELT	53.253	86.277	688.8	92.8			163.8			GS	bulletin
CHI3&	43.527	78.373	692.7	97.5		118.7	170.9		201.1	CSE	record
CHL	43.527	78.374	692.7	94.5					190.0	GS	bulletin
CHAR&	43.496	79.217	701.3	97.0		118.3	170.3		200.4	CSE	record
CHI2&	43.438	78.413	702.7	94.9		116.9	170.2		200.2	CSE	record
AAA	43.267	76.950	726.2	100.1					214.1	GS	bulletin
AAB	43.230	77.230	728.0	98.1			171.5			GS	bulletin
KRS	43.183	76.400	741.5	100.0						GS	bulletin
KRM	42.987	78.275	752.4	102.0						GS	bulletin
KRS&	43.280	75.170	752.9	102.0		123.3	181.9		213.0	CSE	record
KRM&	42.980	78.270	753.1	99.7		121.7	180.1		211.9	CSE	record
ORTO&	42.950	78.770	758.2	102.4		123.6	182.1		213.2	CSE	record
NARY&	43.050	80.271	764.2	103.2		126.2	183.2		217.3	CSE	record
PRZ	42.480	78.400	808.9	109.8					231.5	GS	bulletin
FRU	42.830	74.620	813.7	108.5		129.0	207.5		234.5	GS	bulletin
BOMR&	42.500	75.930	822.8	110.2		139.2	200.2		240.3	CSE	record
RYB	42.280	76.110	844.2	114.5			201.5		243.5	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/29/66	06:58:00.5	49.8344	78.0734

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRN	41.430	76.000	938.7	125.0						GS	bulletin
NRN&	41.420	75.800	942.6	125.0		156.0	220.7		266.5	CSE	record
KAZA&	41.450	73.970	975.9	129.1		163.0	230.7		280.9	CSE	record
KARK&	41.630	72.730	992.9	128.0		162.1	229.9		279.6	CSE	record
KZUR&	41.430	73.280	996.7	128.1		162.4	230.3		279.9	CSE	record
RYAZ&	41.470	72.280	1024.1	138.3		170.2	241.2		292.9	CSE	record
CHM	42.319	69.603	1052.5	138.5					303.5	GS	bulletin
KZDZ&	41.250	71.980	1056.6	139.5			243.7		298.9	CSE	record
TERS&	41.520	71.130	1061.3	140.4			246.1		299.3	CSE	record
UER	51.563	94.087	1147.1	148.5					329.0	GS	record
TAS	41.340	69.310	1156.0	150.5					333.5	GS	bulletin
MUR	38.370	73.930	1306.2	174.0					372.8	GS	bulletin
GAR	39.000	70.320	1342.3	172.7						GS	bulletin
SVE	56.827	60.637	1395.8	175.5					392.5	GS	bulletin
KHO	37.480	71.530	1459.6	188.6				335.5		GS	bulletin
MOY	51.670	101.000	1625.5	208.5					420.5	GS	bulletin
MOY	51.670	101.000	1625.5	208.8				374.0	457.0	GS	record
ARS	51.920	102.430	1723.3	220.5					492.0	GS	record
ZAK	50.383	103.283	1796.5	227.1				421.9	504.8	GS	bulletin
ZAK	50.383	103.283	1796.5	227.5			386.3	407.5	513.0	GS	record
TIG	52.770	106.330	1986.1	247.2						GS	record
KYA	50.370	106.450	2019.4		251.5					GS	bulletin
ASH	37.950	58.350	2044.1	256.5						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/29/66	06:58:00.5	49.8344	78.0734

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KAT	39.028	56.270	2091.6	262.5						GS	bulletin
MSH	36.311	59.588	2107.4	264.0						ISC	bulletin
NIZ	55.770	109.550	2204.4	269.8					629.0	GS	record
NRI	69.430	88.083	2255.0		276.7					GS	record
NRI	69.430	88.083	2255.1	276.5				505.5		GS	record
ALL	54.680	110.810	2279.5		277.3				651.8	GS	record
UKT	55.480	113.620	2459.2		296.1				698.7	GS	record
BOD	57.850	114.183	2506.1		297.7			545.1	712.1	GS	record
GRO	43.320	45.750	2555.0		309.5					GS	bulletin
NLT	56.500	115.700	2589.8		308.0				731.5	GS	record
TEH	35.738	51.386	2655.9		317.5					ISC	bulletin
KRV	40.647	46.319	2663.9		315.5					GS	bulletin
SKL	55.870	117.380	2694.8		318.3					GS	record
GRS	39.500	46.330	2734.3		323.5					GS	bulletin
CAA	56.900	118.270	2747.2		322.1				782.5	GS	record
MOS	55.738	37.625	2765.7		323.5				775.5	GS	bulletin
STE	41.000	44.370	2781.5		326.1					GS	bulletin
BKR	41.733	43.517	2800.5		329.3					GS	bulletin
ERE	40.170	44.470	2824.0		331.6					GS	bulletin
TAB	38.068	46.327	2828.6		332.0					ISC	bulletin
OBN	55.115	36.568	2837.6		327.8			616.5	801.8	GS	bulletin
OBN	55.115	36.568	2837.6		328.0			599.5	797.0	GS	record
ABS	41.750	42.810	2850.3		332.9					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/29/66	06:58:00.5	49.8344	78.0734

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TUP	54.430	119.900	2867.5		271.5					GS	bulletin
TUP	54.430	119.900	2867.5		331.7				823.7	GS	record
SHL	25.567	91.883	2933.6		337.5					ISC	bulletin
KPR	43.680	40.200	2955.9		339.5					GS	bulletin
SOC	43.583	39.720	2975.5		341.5					GS	bulletin
SOC	43.583	39.720	2975.5		341.5					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/19/66	03:57:59.9	49.7471	78.0205

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UKGK&	49.833	82.283	306.8	45.5		53.5	77.5		84.8	CSE	record
KZAG&	45.375	78.733	488.5	73.7		82.8	124.1		141.3	CSE	record
ILI&	43.900	77.122	652.9	87.5		108.2	153.9		182.4	CSE	record
BRV	53.083	70.250	654.6	88.9		105.1	156.5		180.5	GS	bulletin
ILI	43.860	77.032	658.0	87.5						GS	bulletin
NVS	54.850	83.266	670.2	90.1						GS	record
CHI3&	43.527	78.373	691.2	94.5		117.1	170.4		200.5	CSE	record
ELT	53.253	86.277	692.2	94.3			165.1			GS	bulletin
CHAR&	43.496	79.217	700.1	94.8		118.0	170.5		200.8	CSE	record
AAA	43.267	76.950	724.2	96.8			188.2		208.2	GS	bulletin
AAB	43.230	77.230	726.2	96.3		118.3	174.0		205.3	GS	bulletin
CUR	50.097	88.352	741.7	101.9			178.9			GS	bulletin
KRS&	43.280	75.170	750.4	98.7		122.6	182.8		213.3	CSE	record
KRM&	42.980	78.270	751.6	98.6		122.2	182.5		212.9	CSE	record
ORTO&	42.950	78.770	756.9	99.1		122.7	182.9		213.6	CSE	record
NARY&	43.050	80.271	763.3	101.3		125.9	183.4		217.6	CSE	record
FRU	42.830	74.620	811.2	107.6		135.1		206.1	233.1	GS	bulletin
BOMR&	42.500	75.930	820.6	108.4		134.7	199.5		240.3	CSE	record
NRN	41.430	76.000	936.5	126.1						GS	bulletin
NRN&	41.420	75.800	940.4	126.1		155.9	220.8		266.7	CSE	record
KARK&	41.630	72.730	990.1	129.1		160.4	230.2		280.1	CSE	record
KZUR&	41.430	73.280	994.0	129.7		160.6	230.6		280.9	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/19/66	03:57:59.9	49.7471	78.0205

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RYAZ&	41.470	72.280	1021.2	137.9			244.8		299.3	CSE	record
CHM	42.319	69.603	1049.3	137.1			242.1			GS	bulletin
TERS&	41.520	71.130	1058.3	140.9			246.4		299.8	CSE	record
ANR	40.750	72.370	1091.8	142.1			270.1		312.1	GS	bulletin
FRG	40.370	71.780	1149.8	149.6				275.6	334.6	GS	bulletin
UER	51.563	94.087	1150.6	149.6		192.1	266.6		325.1	GS	record
MUR	38.370	73.930	1303.8	158.0					365.5	GS	bulletin
GAR	39.000	70.320	1339.3	172.3						GS	bulletin
SVE	56.827	60.637	1394.5	177.1			312.1	342.1		GS	bulletin
SAM	39.660	66.950	1418.6	183.1			321.1	341.1		GS	bulletin
DSH	38.570	68.760	1441.8	206.3				346.3		GS	bulletin
KHO	37.480	71.530	1456.9	187.4				357.9		GS	bulletin
MOY	51.670	101.000	1629.0	208.9	209.9			369.1	462.1	GS	record
MOY	51.670	101.000	1629.0	210.1					420.1	GS	bulletin
ARS	51.920	102.430	1726.7		221.4		366.8	391.4	494.1	GS	record
WRS	34.150	71.400	1813.0					421.1		ISC	bulletin
WRS	34.150	71.400	1813.0	227.1						ISC	bulletin
IRK	52.242	104.270	1851.7	233.1				432.1		GS	bulletin
TIG	52.770	106.330	1989.6	248.9					566.1	GS	record
KYA	50.370	106.450	2022.8	253.6				466.1	570.1	GS	bulletin
ASH	37.950	58.350	2040.6	256.3						GS	bulletin
MSH	36.311	59.588	2104.0	272.1						ISC	bulletin
BGZ	53.620	109.630	2207.3	271.2					635.6	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/19/66	03:57:59.9	49.7471	78.0205

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NIZ	55.770	109.550	2207.9	272.2	271.1				635.4	GS	record
ALL	54.680	110.810	2283.0	278.7	272.6			514.1	651.6	GS	record
KMO	55.880	111.200	2311.8	285.9	281.4				661.3	GS	record
NDI	28.683	77.217	2335.9		284.5					ISC	bulletin
QUE	30.188	66.950	2359.2				489.1			ISC	bulletin
QUE	30.188	66.950	2359.2		287.6					ISC	bulletin
UKT	55.480	113.620	2462.7		297.0				707.1	GS	record
BOD	57.850	114.183	2509.6		298.9			547.6	717.6	GS	record
BOD	57.850	114.183	2509.6		299.1			548.6		GS	bulletin
GRO	43.320	45.750	2551.8		308.7					GS	bulletin
NLT	56.500	115.700	2593.2		309.3					GS	record
KRV	40.647	46.319	2660.5		315.6					GS	bulletin
DUS	42.080	44.700	2693.2		321.1					GS	bulletin
SKL	55.870	117.380	2698.3		318.6					GS	record
GRS	39.500	46.330	2730.9		323.1					GS	bulletin
CAA	56.900	118.270	2750.7		323.6				783.1	GS	record
MOS	55.738	37.625	2763.8		323.1				780.1	GS	bulletin
NAK	39.211	45.412	2813.9		332.1					GS	bulletin
AKH	41.410	43.480	2818.2		330.1					GS	bulletin
TAB	38.068	46.327	2825.1		272.1					ISC	bulletin
OBN	55.115	36.568	2835.6		328.8			615.1	819.1	GS	bulletin
OBN	55.115	36.568	2835.6		329.1			605.1	802.1	GS	record
ABS	41.750	42.810	2847.1		332.1					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/19/66	03:57:59.9	49.7471	78.0205

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TUP	54.430	119.900	2871.0		322.6					GS	bulletin
TUP	54.430	119.900	2871.0		332.5				820.0	GS	record
SHL	25.567	91.883	2933.7		337.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
02/26/67	03:57:59.8	49.7457	78.0823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UKGK&	49.833	82.283	302.3	46.0		53.9	78.0		85.1	CSE	record
KZAG&	45.375	78.733	487.9	69.9		82.2	124.0		141.1	CSE	record
ILI&	43.900	77.122	653.2	87.8		108.2	153.6		182.3	CSE	record
BRV	53.083	70.250	658.3	89.7			158.9			GS	bulletin
ILI	43.860	77.032	658.4	87.8		107.3	136.5			GS	bulletin
NVS	54.850	83.266	668.1	90.2		106.2				GS	bulletin
NVS	54.850	83.266	668.1	90.2		109.2				GS	record
ELT	53.253	86.277	688.8	94.0			165.0			GS	bulletin
ELT	53.253	86.277	688.8	94.0			165.4		197.4	GS	record
CHI3&	43.527	78.373	690.9	94.9		115.3	168.8		199.7	CSE	record
CHAR&	43.496	79.217	699.4	95.1		115.5	169.0		200.6	CSE	record
AAA	43.267	76.950	724.6	98.1			173.1		204.1	GS	bulletin
KRS	43.183	76.400	740.0	99.2						GS	bulletin
KRM	42.987	78.275	750.6	100.6						GS	bulletin
KRM&	42.980	78.270	751.4	100.6		122.6	181.3		211.9	CSE	record
KRS&	43.280	75.170	751.7	101.0		122.6	181.5		212.8	CSE	record
ORTO&	42.950	78.770	756.4	101.2		122.8	181.9		213.9	CSE	record
NARY&	43.050	80.271	762.1	102.4		125.4	183.3		217.6	CSE	record
PRZ	42.480	78.400	807.1	108.7			179.5		228.7	GS	bulletin
FRU	42.830	74.620	812.6	108.2			191.7		232.2	GS	bulletin
BOMR&	42.500	75.930	821.4	107.3		134.5	199.3		240.3	CSE	record
NRN	41.430	76.000	937.2	125.2					269.2	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
02/26/67	03:57:59.8	49.7457	78.0823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRN&	41.420	75.800	941.1	125.2		155.2	220.0		266.2	CSE	record
UZUN&	41.970	72.520	964.4	126.5		156.1	221.1		267.4	CSE	record
KARK&	41.630	72.730	991.9	128.4		161.3	229.9		279.5	CSE	record
KZUR&	41.430	73.280	995.6	129.0		161.9	230.2		280.3	CSE	record
KARA&	41.620	72.580	997.9	129.8		162.1	230.9		281.0	CSE	record
ARKI&	41.770	71.970	1004.0	131.8		165.2	231.8		283.7	CSE	record
RYAZ&	41.470	72.280	1023.2	134.8			240.8		296.5	CSE	record
CHM	42.319	69.603	1052.1	137.2			242.2			GS	bulletin
KZDZ&	41.250	71.980	1055.7	137.4			246.0		298.5	CSE	record
TERS&	41.520	71.130	1060.6	138.0			246.5		299.4	CSE	record
YARD&	41.520	71.010	1065.3	138.6					299.9	CSE	record
NAM	41.000	71.660	1092.2	143.7			272.7		338.7	GS	bulletin
ANR	40.750	72.370	1093.6	142.2			272.2		312.2	GS	bulletin
UER	51.563	94.087	1146.3	148.3						GS	bulletin
UER	51.563	94.087	1146.3	149.2		192.2	259.2			GS	record
FRG	40.370	71.780	1151.8	149.6						GS	bulletin
TAS	41.340	69.310	1155.5	148.7			284.7			GS	bulletin
GAR	39.000	70.320	1341.4	171.7				327.7		GS	bulletin
SVE	56.827	60.637	1397.9	178.2					391.2	GS	bulletin
SAM	39.660	66.950	1421.4	181.2			340.2		414.2	GS	bulletin
DSH	38.570	68.760	1444.1	184.6				347.6		GS	bulletin
ORL	52.520	99.830	1545.7	200.3			344.1	357.6	443.3	GS	record
MOY	51.670	101.000	1624.7	208.7	215.7		353.2		463.2	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
02/26/67	03:57:59.8	49.7457	78.0823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MOY	51.670	101.000	1624.7	209.2	216.2					GS	bulletin
ARS	51.920	102.430	1722.5		220.8		369.1	394.7	491.6	GS	record
ZAK	50.383	103.283	1795.6	227.9				422.4		GS	bulletin
IRK	52.242	104.270	1847.5	233.2	238.2			431.2		GS	bulletin
TIG	52.770	106.330	1985.5	247.4			453.5	451.7	568.7	GS	record
KAB	52.050	106.650	2011.2	252.0				462.0		GS	bulletin
KYA	50.370	106.450	2018.5	252.9				459.9		GS	bulletin
LAH	31.550	74.333	2041.7	252.2						ISC	bulletin
ASH	37.950	58.350	2044.3	253.2						GS	bulletin
KAT	39.028	56.270	2092.0	259.2	262.2					GS	bulletin
MSH	36.311	59.588	2107.4	263.7						ISC	bulletin
BGZ	53.620	109.630	2203.2	270.2	273.6		489.6		629.1	GS	record
NIZ	55.770	109.550	2204.1	271.0			477.7	492.2	631.2	GS	record
NRI	69.430	88.083	2256.6	273.6				502.2	630.6	GS	record
ALL	54.680	110.810	2279.1	278.2				507.2	647.2	GS	record
KMO	55.880	111.200	2308.1	285.7	280.7					GS	record
NDI	28.683	77.217	2335.9		284.6					ISC	bulletin
QUE	30.188	66.950	2361.1		287.4					ISC	bulletin
MAK	42.961	47.505	2449.0		301.2					GS	bulletin
UKT	55.480	113.620	2458.8		297.0				710.2	GS	record
BOD	57.850	114.183	2506.0		297.7					GS	bulletin
BOD	57.850	114.183	2506.0		298.8		541.8	550.8	715.6	GS	record
NLT	56.500	115.700	2589.5		309.0				747.7	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
02/26/67	03:57:59.8	49.7457	78.0823

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TEH	35.738	51.386	2656.4		318.2					ISC	bulletin
KRV	40.647	46.319	2664.9		315.7					GS	bulletin
SKL	55.870	117.380	2694.5		318.7				774.7	GS	record
TI2	41.730	44.750	2713.6		321.2			594.2	793.2	GS	bulletin
GRS	39.500	46.330	2735.2		318.2					GS	bulletin
CAA	56.900	118.270	2747.0		322.7				778.9	GS	record
MOS	55.738	37.625	2767.8		324.2			598.2		GS	bulletin
STE	41.000	44.370	2782.6		326.2					GS	bulletin
BKR	41.733	43.517	2801.7		329.6				793.0	GS	bulletin
TAB	38.068	46.327	2829.4		332.3					ISC	bulletin
OBN	55.115	36.568	2839.6		328.9			599.7	797.2	GS	record
OBN	55.115	36.568	2839.6		329.2				786.2	GS	bulletin
ABS	41.750	42.810	2851.5		333.6					GS	bulletin
TUP	54.430	119.900	2867.1		332.2					GS	bulletin
TUP	54.430	119.900	2867.1		332.3				827.3	GS	record
KAR	24.933	67.143	2907.6		334.3					ISC	bulletin
KPR	43.680	40.200	2957.3		340.2					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/67	05:04:00.2	49.7809	78.0038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
UKGK&	49.833	82.283	307.8	45.1		53.3	77.3		84.4	CSE	record
KZAG&	45.375	78.733	492.4	69.5		81.8	123.9		141.1	CSE	record
BRV	53.083	70.250	651.4	88.7		103.9	153.2		177.1	GS	bulletin
ILI&	43.900	77.122	656.5	88.4		107.4	153.3		182.2	CSE	record
ILI	43.860	77.032	661.6	93.3					187.0	GS	bulletin
NVS	54.850	83.266	667.6	89.8		109.8				GS	record
ELT	53.253	86.277	690.9	94.0						GS	bulletin
ELT	53.253	86.277	690.9	94.0			165.5		196.5	GS	record
CHI3&	43.527	78.373	695.0	95.0		116.6	168.6		200.3	CSE	record
AAA	43.267	76.950	727.8	97.7	108.1		179.8		204.5	GS	bulletin
TLG&	43.238	77.225	728.9	96.8		120.9	174.2		219.1	CSE	record
AAB	43.230	77.230	729.8	97.4		117.2	174.7		204.1	GS	bulletin
CUR	50.097	88.352	742.4	100.9			177.3			GS	bulletin
KRS	43.183	76.400	742.8	98.9						GS	bulletin
KRS&	43.280	75.170	753.7	100.6		122.5	181.5		212.8	CSE	record
KRM	42.987	78.275	754.6	100.6		111.1			213.2	GS	bulletin
KRM&	42.980	78.270	755.4	99.4		122.5	181.2		212.3	CSE	record
PRZ	42.480	78.400	811.2	110.3					228.3	GS	bulletin
FRU	42.830	74.620	814.3	107.8		135.8			224.8	GS	bulletin
BOMR&	42.500	75.930	824.0	109.5		134.6	199.2		240.1	CSE	record
RYB	42.280	76.110	845.5	113.3			201.3		241.3	GS	bulletin
NRN	41.430	76.000	940.0	126.6					265.3	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/67	05:04:00.2	49.7809	78.0038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRN&	41.420	75.800	943.8	126.6		155.5	219.9		265.7	CSE	record
KAZA&	41.450	73.970	976.4	127.3		160.0	227.3		275.2	CSE	record
KARK&	41.630	72.730	992.9	130.6		161.7	230.6		280.5	CSE	record
KZUR&	41.430	73.280	996.9	130.8		161.8	230.9		280.8	CSE	record
RYAZ&	41.470	72.280	1024.0	134.1			240.6		296.3	CSE	record
CHM	42.319	69.603	1051.3	137.3			247.8			GS	bulletin
KZDZ&	41.250	71.980	1056.5	137.4			245.1		298.2	CSE	record
TERS&	41.520	71.130	1060.8	137.8			246.2		299.4	CSE	record
NAM	41.000	71.660	1092.8	143.6						GS	bulletin
ANR	40.750	72.370	1094.7	143.3			273.8		313.8	GS	bulletin
UER	51.563	94.087	1150.7	149.4						GS	bulletin
UER	51.563	94.087	1150.7	149.8					326.8	GS	record
FRG	40.370	71.780	1152.6	149.9						GS	bulletin
MUR	38.370	73.930	1307.1						370.9	GS	bulletin
GAR	39.000	70.320	1342.0	171.8				326.5	390.8	GS	bulletin
SVE	56.827	60.637	1391.1	176.8						GS	bulletin
SAM	39.660	66.950	1420.6	180.8						GS	bulletin
DSH	38.570	68.760	1444.2	185.8					412.8	GS	bulletin
KHO	37.480	71.530	1459.9	180.0						GS	bulletin
MOY	51.670	101.000	1629.1	209.8					468.8	GS	bulletin
ZAK	50.383	103.283	1800.3	228.4						GS	bulletin
KYA	50.370	106.450	2023.2	253.5						GS	bulletin
ASH	37.950	58.350	2041.6				458.8			GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
10/17/67	05:04:00.2	49.7809	78.0038

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KAT	39.028	56.270	2088.7	261.8						GS	bulletin
NRI	69.430	88.083	2253.8		274.8			498.8		GS	bulletin
NRI	69.430	88.083	2253.8	275.8				497.8	627.8	GS	record
NDI	28.683	77.217	2339.6		285.0					ISC	bulletin
BOD	57.850	114.183	2508.4		298.8					GS	bulletin
TEH	35.738	51.386	2653.0		317.8					ISC	bulletin
DUS	42.080	44.700	2692.4		320.8					GS	bulletin
PYA	44.033	43.058	2708.7		318.3					GS	bulletin
GOR	41.980	44.130	2738.7		323.8					GS	bulletin
MHV	54.950	37.770	2757.8		322.8					GS	record
MOS	55.738	37.625	2760.9		321.8			599.8	785.8	GS	bulletin
ERE	40.170	44.470	2820.1		321.2					GS	bulletin
TAB	38.068	46.327	2825.0		325.8					ISC	bulletin
OBN	55.115	36.568	2832.8		328.8					GS	bulletin
ABS	41.750	42.810	2846.2		333.8					GS	bulletin
SHL	25.567	91.883	2937.5		337.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/19/68	05:05:59.8	49.9803	78.9855

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KZAG&	45.375	78.733	511.8	70.4		84.4	126.6		144.7	CSE	record
NVS	54.850	83.266	614.4	83.0		101.2	149.2		175.2	GS	record
CUR	50.097	88.352	670.1	92.9		104.2	163.3			GS	bulletin
ILI&	43.900	77.122	689.9	91.5		111.2	163.4		195.2	CSE	record
ILI	43.860	77.032	695.6	91.5		114.0	172.0			GS	bulletin
BRV	53.083	70.250	696.3	94.2		115.8	163.8		196.8	GS	bulletin
CHIL&	43.567	78.416	713.5	95.8		117.8	172.2		204.2	CSE	record
TLG&	43.238	77.225	760.6	101.4		123.2	181.7		215.7	CSE	record
AAB	43.230	77.230	761.4	101.7		123.0	181.7		218.2	GS	bulletin
AAA	43.267	76.950	761.5	101.6						GS	bulletin
KRM	42.987	78.275	778.4	102.8					216.7	GS	bulletin
KRM&	42.980	78.270	779.2	102.8		124.3	182.3		216.4	CSE	record
KRS	43.183	76.400	780.2	103.9			174.9			GS	bulletin
KRS&	43.280	75.170	798.9	103.9		129.9	188.5		226.9	CSE	record
PRZ	42.480	78.400	834.0	111.5		143.2			236.5	GS	bulletin
BOMR&	42.500	75.930	863.1	114.2		144.2	207.0		250.5	CSE	record
RYB	42.280	76.110	883.1	117.5					242.7	GS	bulletin
NRN	41.430	76.000	977.0	129.7		160.7				GS	bulletin
KAZA&	41.450	73.970	1023.6	134.3		170.2	240.5		293.0	CSE	record
KARK&	41.630	72.730	1045.7	136.9			245.2		297.2	CSE	record
UER	51.563	94.087	1076.8	140.6					300.8	GS	bulletin
UER	51.563	94.087	1076.8	140.6		170.2			298.2	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/19/68	05:05:59.8	49.9803	78.9855

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
RYAZ&	41.470	72.280	1078.1	140.1			248.3		300.7	CSE	record
KZDZ&	41.250	71.980	1111.1	143.8			251.2		304.3	CSE	record
ANR	40.750	72.370	1146.9	149.7		194.7	281.7		332.7	GS	bulletin
NAM	41.000	71.660	1148.0	149.8			265.8			GS	bulletin
TAS	41.340	69.310	1217.5	155.2					347.2	GS	bulletin
MUR	38.370	73.930	1349.4	177.4					384.2	GS	bulletin
GAR	39.000	70.320	1397.5	178.7				340.1		GS	bulletin
SVE	56.827	60.637	1430.9	181.2			320.2			GS	bulletin
ORL	52.520	99.830	1475.9	186.9		239.7	341.9		424.9	GS	record
SAM	39.660	66.950	1484.8	196.2						GS	bulletin
DSH	38.570	68.760	1503.0	190.8					430.8	GS	bulletin
KHO	37.480	71.530	1509.4	194.2						GS	bulletin
KUL	37.900	69.780	1527.7	198.7				369.4	442.9	GS	bulletin
MOY	51.670	101.000	1555.2	200.4			348.7		438.2	GS	record
MOY	51.670	101.000	1555.2	200.6						GS	bulletin
ARS	51.920	102.430	1652.9	214.2					472.2	GS	record
ZAK	50.383	103.283	1726.8	220.3					495.5	GS	bulletin
IRK	52.242	104.270	1777.7						509.2	GS	bulletin
WRS	34.150	71.400	1862.1	233.2						ISC	bulletin
TIG	52.770	106.330	1915.6	241.1					541.2	GS	record
BGZ	53.620	109.630	2133.3	262.8					603.8	GS	record
NIZ	55.770	109.550	2134.8	263.9			485.5	481.7	603.2	GS	record
KAT	39.028	56.270	2161.7	267.2						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/19/68	05:05:59.8	49.9803	78.9855

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NRI	69.430	88.083	2219.9	271.2				497.2		GS	bulletin
NRI	69.430	88.083	2219.9	272.1						GS	record
KMO	55.880	111.200	2238.8	277.7	273.7				637.4	GS	record
NDI	28.683	77.217	2365.6		287.0					ISC	bulletin
UKT	55.480	113.620	2389.4		290.4				687.8	GS	record
QUE	30.188	66.950	2414.8		291.7					ISC	bulletin
BOD	57.850	114.183	2437.8		292.0					GS	bulletin
BOD	57.850	114.183	2437.8		292.1			536.1	704.4	GS	record
NLT	56.500	115.700	2520.5		302.2			546.2	719.2	GS	record
GRO	43.320	45.750	2622.6		314.2					GS	bulletin
SKL	55.870	117.380	2625.2		311.8				747.8	GS	record
CAA	56.900	118.270	2678.2		316.9				769.9	GS	record
TEH	35.738	51.386	2726.2		322.7					ISC	bulletin
DUS	42.080	44.700	2764.7		325.2					GS	bulletin
PYA	44.033	43.058	2779.2		325.2					GS	bulletin
TUP	54.430	119.900	2797.3		326.7					GS	bulletin
TUP	54.430	119.900	2797.3		326.8				795.2	GS	record
GOR	41.980	44.130	2810.9		331.2					GS	bulletin
MOS	55.738	37.625	2811.6		327.2				786.2	GS	bulletin
STE	41.000	44.370	2850.3		332.2					GS	bulletin
BKR	41.733	43.517	2868.6		335.0					GS	bulletin
ABS	41.750	42.810	2918.2		338.2					GS	bulletin
SHL	25.567	91.883	2923.9		336.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/29/68	03:43:00.0	49.8120	78.1219

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KZAG&	45.375	78.733	494.9	69.0		80.8	124.0		141.0	CSE	record
BRV	53.083	70.250	656.1	88.4			155.0		181.6	GS	bulletin
NVS	54.850	83.266	660.3	88.0		110			192.0	GS	bulletin
ILI&	43.900	77.122	660.9	88.8		108.4	154.1		182.4	CSE	record
ILI	43.860	77.032	666.1	88.8						GS	bulletin
ELT	53.253	86.277	682.0	92.5			161.8			GS	bulletin
CHIL&	43.567	78.416	693.8	94.9		117.1	170.5		200.6	CSE	record
TLG&	43.238	77.225	733.2	98.0		121.2	174.8		209.5	CSE	record
AAB	43.230	77.230	734.0	98.2		120.2	176.5		211.5	GS	bulletin
KRM	42.987	78.275	757.9		101.5					GS	bulletin
KRM&	42.980	78.270	758.7	100.3		122.6	181.8		212.8	CSE	record
KRS&	43.280	75.170	759.6	101.5		125.5	183.8		217.6	CSE	record
FRU	42.830	74.620	820.5	108.0	110.0	139.5	192.0		232.0	GS	bulletin
RYB	42.280	76.110	850.5	113.8						GS	bulletin
NRN	41.430	76.000	945.0	126.4					266.0	GS	bulletin
NRN&	41.420	75.800	948.9	125.7		156.1	219.6		266.1	CSE	record
KARK&	41.630	72.730	999.8	128.6		162	231.2		280.3	CSE	record
KZUR&	41.430	73.280	1003.5	128.2		161.9	230.7		280.1	CSE	record
RYAZ&	41.470	72.280	1031.0	134.4			240.7		296.6	CSE	record
CHM	42.319	69.603	1059.5	138.0			252.0			GS	bulletin
KZDZ&	41.250	71.980	1063.6	137.4			246.1		298.9	CSE	record
TERS&	41.520	71.130	1068.3	138.3			246.8		299.8	CSE	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/29/68	03:43:00.0	49.8120	78.1219

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NAM	41.000	71.660	1100.0	145.3			247.8			GS	bulletin
ANR	40.750	72.370	1101.5	141.0	147.0				316.0	GS	bulletin
UER	51.563	94.087	1141.6	148.4						GS	bulletin
FRG	40.370	71.780	1159.6	151.0					331.5	GS	bulletin
TAS	41.340	69.310	1163.0	149.0			278.0			GS	bulletin
MUR	38.370	73.930	1312.7	173.8					362.3	GS	bulletin
GAR	39.000	70.320	1349.2	172.9					378.3	GS	bulletin
SVE	56.827	60.637	1395.3	177.0			309.0			GS	bulletin
SVE	56.827	60.637	1395.3	178.0			313.0	343.0	396.0	GS	record
SAM	39.660	66.950	1428.8	182.0					416.0	GS	bulletin
DSH	38.570	68.760	1451.8	185.8					413.8	GS	bulletin
KUL	37.900	69.780	1479.7	188.7					424.2	GS	bulletin
ORL	52.520	99.830	1540.6	200.3			347.9	360.7	444.0	GS	record
MOY	51.670	101.000	1619.9	208.8	215.1					GS	bulletin
MOY	51.670	101.000	1619.9	209.4	215.7		362.5	374.0	470.0	GS	record
ARS	51.920	102.430	1717.6	220.0					497.5	GS	record
ZAK	50.383	103.283	1791.3	227.6				413.6		GS	bulletin
ZAK	50.383	103.283	1791.3	227.6			393.0	411.0	509.0	GS	record
IRK	52.242	104.270	1842.4	232.0				429.0		GS	bulletin
KBL	34.541	69.043	1848.9	232.0						ISC	bulletin
TIG	52.770	106.330	1980.2	247.0			434.0	451.5	561.5	GS	record
KAB	52.050	106.650	2006.2	250.7						GS	bulletin
KYA	50.370	106.450	2014.1	252.3					567.0	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/29/68	03:43:00.0	49.8120	78.1219

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ASH	37.950	58.350	2050.7	253.5						GS	bulletin
KAT	39.028	56.270	2097.8	260.0				483.0	580.0	GS	bulletin
NIZ	55.770	109.550	2198.0	271.2			481.0	492.0		GS	record
NRI	69.430	88.083	2248.9		274.0			488.0		GS	bulletin
NRI	69.430	88.083	2248.9	275.0				502.0		GS	record
ALL	54.680	110.810	2273.3	279.0				511.0	646.0	GS	record
KMO	55.880	111.200	2301.9		281.0			513.0	653.0	GS	record
NDI	28.683	77.217	2343.4		285.2					ISC	bulletin
QUE	30.188	66.950	2369.0		287.8					ISC	bulletin
UKT	55.480	113.620	2452.8		296.0			548.0		GS	record
BOD	57.850	114.183	2499.5		296.6			554.0	713.5	GS	record
GRO	43.320	45.750	2559.5		308.0					GS	bulletin
NLT	56.500	115.700	2583.3		308.5					GS	record
TEH	35.738	51.386	2662.1		318.0					ISC	bulletin
KRV	40.647	46.319	2669.0		316.7					GS	bulletin
DUS	42.080	44.700	2701.2		320.2					GS	bulletin
PYA	44.033	43.058	2717.2		321.0					GS	bulletin
GRS	39.500	46.330	2739.6		323.0					GS	bulletin
CAA	56.900	118.270	2740.7		322.2			586.0	774.0	GS	record
GOR	41.980	44.130	2747.5		321.0					GS	bulletin
MOS	55.738	37.625	2766.6		324.0					GS	bulletin
STE	41.000	44.370	2786.4		326.4					GS	bulletin
BKR	41.733	43.517	2805.2	338.5	329.5					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
09/29/68	03:43:00.0	49.8120	78.1219

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ERE	40.170	44.470	2829.0		330.5					GS	bulletin
TAB	38.068	46.327	2834.1		332.8					ISC	bulletin
OBN	55.115	36.568	2838.6		329.0			603.0	798.0	GS	record
ABS	41.750	42.810	2854.9		333.0					GS	bulletin
TUP	54.430	119.900	2861.2		330.5					GS	bulletin
TUP	54.430	119.900	2861.2		331.5			596.0	817.0	GS	record
ZUG	42.400	41.800	2891.7		351.0					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/07/69	08:26:59.8	49.8215	78.0627

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NVS	54.850	83.266	661.6	90.0		111.9			194.2	GS	bulletin
NVS	54.850	83.266	661.6	90.2		110.2	158.6		186.2	GS	record
ELT	53.253	86.277	684.8	93.5			163.0			GS	bulletin
AAB	43.230	77.230	734.7	98.8		121.4	171.5		201.0	GS	bulletin
KRM	42.987	78.275	759.0	101.4						GS	bulletin
PRZ	42.480	78.400	815.5	109.7						GS	bulletin
FRU	42.830	74.620	820.0	109.7						GS	bulletin
RYB	42.280	76.110	850.7	114.2			212.2		240.2	GS	bulletin
NRN	41.430	76.000	945.2						269.2	GS	bulletin
CHM	42.319	69.603	1057.5	149.2			256.2			GS	bulletin
NAM	41.000	71.660	1098.8	144.9			266.1			GS	bulletin
UER	51.563	94.087	1145.4	148.2		181.2	260.0		319.2	GS	record
UER	51.563	94.087	1145.4	148.8			278.8			GS	bulletin
FRG	40.370	71.780	1158.6	150.3						GS	bulletin
TAS	41.340	69.310	1161.1	150.2					325.2	GS	bulletin
MUR	38.370	73.930	1312.6	172.6					380.3	GS	bulletin
GAR	39.000	70.320	1348.0	172.7				325.5		GS	bulletin
SVE	56.827	60.637	1391.4	177.2						GS	bulletin
SAM	39.660	66.950	1426.7	182.2					409.2	GS	bulletin
DSH	38.570	68.760	1450.3	195.8					412.8	GS	bulletin
KHO	37.480	71.530	1465.7	188.2						GS	bulletin
KUL	37.900	69.780	1478.5	192.6					432.5	GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/07/69	08:26:59.8	49.8215	78.0627

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ORL	52.520	99.830	1544.2	201.0				354.5	443.0	GS	record
MOY	51.670	101.000	1623.7	209.9					478.4	GS	bulletin
MOY	51.670	101.000	1623.7	210.1	216.2	266.5992	373.7		464.7	GS	record
ARS	51.920	102.430	1721.4	220.7					493.8	GS	record
ZAK	50.383	103.283	1795.2	228.0				406.0	508.2	GS	record
KBL	34.541	69.043	1847.9	232.7						ISC	bulletin
TIG	52.770	106.330	1983.9	247.5				449.7	567.2	GS	record
KAB	52.050	106.650	2009.9	252.3						GS	bulletin
ASH	37.950	58.350	2047.6	254.2						GS	bulletin
KAT	39.028	56.270	2094.5	262.2						GS	bulletin
MSH	36.311	59.588	2111.5	265.2						ISC	bulletin
NIZ	55.770	109.550	2201.2		270.9			496.9	620.5	GS	record
NRI	69.430	88.083	2248.6	275.2			486.2	503.7		GS	record
ALL	54.680	110.810	2276.6	278.7					626.2	GS	record
KMO	55.880	111.200	2305.1	284.0	280.8		526.0		643.0	GS	record
QUE	30.188	66.950	2368.0		288.3					ISC	bulletin
KHP	49.720	112.370	2447.5		295.7				698.7	GS	record
MAK	42.961	47.505	2448.5		298.2					GS	bulletin
UKT	55.480	113.620	2456.1		296.7				699.7	GS	record
SHE	40.646	48.642	2501.4		305.2					GS	bulletin
BOD	57.850	114.183	2502.4		298.2					GS	bulletin
BOD	57.850	114.183	2502.4		298.3		544.9	552.5	716.3	GS	record
GRO	43.320	45.750	2555.4		310.2					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
03/07/69	08:26:59.8	49.8215	78.0627

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NLT	56.500	115.700	2586.4		308.7				747.7	GS	record
TEH	35.738	51.386	2658.8		318.2					ISC	bulletin
KRV	40.647	46.319	2665.0		316.2					GS	bulletin
SKL	55.870	117.380	2691.6		318.2				768.7	GS	record
DUS	42.080	44.700	2697.0		320.4					GS	bulletin
TI2	41.730	44.750	2713.1		321.2					GS	bulletin
GRS	39.500	46.330	2735.7		322.2					GS	bulletin
GOR	41.980	44.130	2743.4		322.2					GS	bulletin
CAA	56.900	118.270	2743.7		323.3				784.1	GS	record
MOS	55.738	37.625	2762.4		322.2					GS	bulletin
STE	41.000	44.370	2782.3		326.2					GS	bulletin
BKR	41.733	43.517	2801.1		329.2					GS	bulletin
ERE	40.170	44.470	2825.0		326.2					GS	bulletin
TAB	38.068	46.327	2830.2		331.9					ISC	bulletin
OBN	55.115	36.568	2834.4		329.2			600.2	806.2	GS	record
TUP	54.430	119.900	2864.6		332.2				824.7	GS	record
TUP	54.430	119.900	2864.6		333.3					GS	bulletin
SHL	25.567	91.883	2939.4		337.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/30/69	06:00:00.2	49.9350	79.0094

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NVS	54.850	83.266	621.0	85.3		104.3	148.3		176.3	GS	record
ELT	53.253	86.277	627.2	85.8		101.1			175.3	GS	record
TLG&	43.238	77.225	754.1	100.7		123.1	182.0		215.3	CSE	record
FRU	42.830	74.620	854.9	112.3		143.8	198.3		244.3	GS	record
KARK&	41.630	72.730	1039.2	135.8			244.4		296.9	CSE	record
UER	51.563	94.087	1080.5	144.3		181.3			305.3	GS	record
CHM	42.319	69.603	1109.3	143.8		186.8	253.8		318.8	GS	record
ANR	40.750	72.370	1140.4	149.4		185.3	267.9		327.3	GS	record
FRG	40.370	71.780	1199.7	155.8			275.3		344.8	GS	record
TAS	41.340	69.310	1211.4	154.8			277.3		342.3	GS	record
SVE	56.827	60.637	1433.2	181.3			320.3		405.3	GS	record
ORL	52.520	99.830	1479.9	191.3			332.3		422.3	GS	record
MOY	51.670	101.000	1558.9	201.1			342.1	356.6	447.1	GS	record
ARS	51.920	102.430	1656.7	213.0					470.3	GS	record
ZAK	50.383	103.283	1730.1	219.6			379.0	397.0	487.6	GS	record
WRS	34.150	71.400	1855.5					429.3		ISC	bulletin
WRS	34.150	71.400	1855.5	237.0						ISC	bulletin
NIL	33.650	73.252	1864.7	230.3						ISC	bulletin
KBL	34.541	69.043	1888.1	239.3						ISC	bulletin
TIG	52.770	106.330	1919.7	241.0				434.6	542.6	GS	record
BGZ	53.620	109.630	2137.7	263.8				486.8	614.8	GS	record
BDN	53.700	110.110	2169.2	267.1			495.3		616.3	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/30/69	06:00:00.2	49.9350	79.0094

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MSH	36.311	59.588	2169.3	268.3						ISC	bulletin
KMO	55.880	111.200	2243.7		275.1		507.6		641.6	GS	record
NDI	28.683	77.217	2359.2		286.3					ISC	bulletin
KHP	49.720	112.370	2382.4		290.2			532.8	683.8	GS	record
QUE	30.188	66.950	2408.4		292.5					ISC	bulletin
BOD	57.850	114.183	2443.1		292.8			536.6	694.3	GS	record
MAK	42.961	47.505	2513.5		303.3			539.3	713.3	GS	record
GRO	43.320	45.750	2620.1		320.3			584.3		GS	bulletin
SKL	55.870	117.380	2630.1		313.0				753.0	GS	record
CAA	56.900	118.270	2683.3		317.2				769.0	GS	record
TEH	35.738	51.386	2721.6		321.8					ISC	bulletin
SRI	36.758	49.383	2777.9				332.3			ISC	bulletin
SRI	36.758	49.383	2777.9		326.1					ISC	bulletin
GRS	39.500	46.330	2800.8		330.8			606.3		GS	record
TUP	54.430	119.900	2802.0		327.1				804.1	GS	record
BKR	41.733	43.517	2866.0		335.3			620.8	820.8	GS	record
OBN	55.115	36.568	2885.7		332.8			627.3	816.3	GS	record
TAB	38.068	46.327	2895.2		336.5					ISC	bulletin
SHL	25.567	91.883	2919.4		335.6					ISC	bulletin
KAR	24.933	67.143	2951.0		340.1					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/28/70	01:58:00.0	49.8015	78.1068

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ELT	53.253	86.277	683.6	93.0			160.8		192.0	GS	record
KKOR&	52.912	69.025	719.8	96.6		119.8	171.0		197.1	CSE	record
TEGR&	43.390	79.720	722.5	96.6		120.6	172.4		210.8	CSE	record
TLG&	43.238	77.225	731.9	97.5		121.5	174.6		213.2	CSE	record
AAB	43.230	77.230	732.8	97.5		119.9	176.5		209.5	GS	bulletin
BKOL&	42.633	79.983	808.9	108.4		132.7	191.0		230.5	CSE	record
CHM	42.319	69.603	1057.9	139.0						GS	bulletin
SUFI&	40.057	73.553	1139.1	148.5			263.8		324.3	CSE	record
UER	51.563	94.087	1142.9	147.0			260.0		318.0	GS	record
FRG	40.370	71.780	1158.1	152.0						GS	bulletin
SVE	56.827	60.637	1395.2	177.5			311.0		397.0	GS	record
ZER&	41.573	64.277	1407.6	178.0			320.2	348.4	400.5	CSE	record
URG&	39.388	67.262	1437.5	182.1			322.4	350.3	404.2	CSE	record
ORL	52.520	99.830	1542.0	200.7			345.0	352.0	439.0	GS	record
MOY	51.670	101.000	1621.3	209.3			368.3	377.3	464.5	GS	record
ARS	51.920	102.430	1719.0	220.8	226.8		379.0	393.6	493.0	GS	record
ZAK	50.383	103.283	1792.6	228.5	233.0		401.0	411.5	511.0	GS	record
IRK	52.242	104.270	1843.8	233.0			411.0		525.5	GS	record
TIG	52.770	106.330	1981.7	249.0			437.0	456.0	568.0	GS	record
LAH	31.550	74.333	2048.1	256.0						ISC	bulletin
NRI	69.430	88.083	2250.0		274.5			501.0	619.5	GS	record
KMO	55.880	111.200	2303.4		280.4		523.5	517.0	660.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/28/70	01:58:00.0	49.8015	78.1068

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NDI	28.683	77.217	2342.2		284.8					ISC	bulletin
QUE	30.188	66.950	2367.4		287.5					ISC	bulletin
KHP	49.720	112.370	2444.9		295.6			541.5	702.0	GS	record
BOD	57.850	114.183	2501.0		298.2			546.5	712.0	GS	record
SHE	40.646	48.642	2504.0		303.0					GS	bulletin
NLT	56.500	115.700	2584.8		308.0			564.0		GS	record
TEH	35.738	51.386	2660.7		319.0					ISC	bulletin
SRI	36.758	49.383	2716.0		322.3					ISC	bulletin
CAA	56.900	118.270	2742.2		322.0				775.0	GS	record
GOR	41.980	44.130	2746.3		323.4					GS	bulletin
STE	41.000	44.370	2785.2		321.6					GS	bulletin
TAB	38.068	46.327	2832.7		332.3					ISC	bulletin
OBN	55.115	36.568	2838.2		329.0			600.0	811.0	GS	record
ABS	41.750	42.810	2853.7		333.4					GS	bulletin
TUP	54.430	119.900	2862.7		332.4			598.0	817.0	GS	record
SHL	25.567	91.883	2935.9		336.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/29/70	07:03:00.0	49.7956	78.1239

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRV	53.083	70.250	657.3	89.2		107.3	157.1			GS	bulletin
NVS	54.850	83.266	661.8	90.0		110.9				GS	bulletin
NVS	54.850	83.266	661.8	90.0		111.0	161.0		189.0	GS	record
ELT	53.253	86.277	683.0	93.0			161.0		192.0	GS	record
TLG&	43.238	77.225	731.4	98.3		121.4	174.5		213.1	CSE	record
AAB	43.230	77.230	732.2	98.3		120.0	176.0		205.8	GS	bulletin
FABK	43.147	76.447	749.3	100.1						GS	bulletin
KRM	42.987	78.275	756.1	101.5			186.0			GS	bulletin
ARYK&	52.945	68.245	770.5	103.5						CSE	record
BKOL&	42.633	79.983	808.0	107.8		132.8	190.2		230.7	CSE	record
FRU	42.830	74.620	818.8	111.5		137.5	187.5		234.0	GS	record
RYB	42.280	76.110	848.7	116.0			201.0			GS	bulletin
CHM	42.319	69.603	1058.2	137.0			243.0		303.0	GS	record
CHM	42.319	69.603	1058.2	138.0						GS	bulletin
NAM	41.000	71.660	1098.5	144.4					319.2	GS	bulletin
ANR	40.750	72.370	1099.9	143.0		173.0	255.0		318.0	GS	record
KUST&	52.583	62.583	1126.4	144.9		180.8	254.3		316.4	CSE	record
SUFI&	40.057	73.553	1138.9	149.0			263.3		325.4	CSE	record
UER	51.563	94.087	1141.9	148.8					322.0	GS	record
FRG	40.370	71.780	1158.1	150.5					328.0	GS	bulletin
FRG	40.370	71.780	1158.1	151.0			272.0		336.5	GS	record
TAS	41.340	69.310	1161.6	151.0					333.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/29/70	07:03:00.0	49.7956	78.1239

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SVE	56.827	60.637	1396.6	177.0			313.0		399.0	GS	record
SAM	39.660	66.950	1427.6	184.0					416.0	GS	record
URG&	39.388	67.262	1437.8	181.9			322.1	350.2	404.6	CSE	record
ORL	52.520	99.830	1541.0	201.5			344.0	358.0		GS	record
MOY	51.670	101.000	1620.3	209.7	214.7		366.7	374.7	464.0	GS	record
ARS	51.920	102.430	1718.0	220.0			384.0	393.0	499.0	GS	record
ZAK	50.383	103.283	1791.5		227.6			408.6	510.0	GS	record
NIL	33.650	73.252	1834.9	231.0						ISC	bulletin
KBL	34.541	69.043	1847.4	172.3						ISC	bulletin
MNL	33.147	73.750	1881.3	237.7						ISC	bulletin
TIG	52.770	106.330	1980.7	248.0	252.5		434.0	452.0	561.0	GS	record
NIZ	55.770	109.550	2198.8	270.5	277.0		478.5	490.0	628.5	GS	record
BDN	53.700	110.110	2229.7	273.2				500.0	631.0	GS	record
NRI	69.430	88.083	2250.2		274.8			503.5	621.5	GS	record
ALL	54.680	110.810	2273.9	278.0				512.0	645.0	GS	record
KMO	55.880	111.200	2302.7		281.1		518.5	508.3	660.0	GS	record
NDI	28.683	77.217	2341.6				519.0			ISC	bulletin
NDI	28.683	77.217	2341.6		285.4					ISC	bulletin
KHP	49.720	112.370	2443.9		296.0		548.2	534.0	701.5	GS	record
UKT	55.480	113.620	2453.6		296.4			546.0	699.0	GS	record
BOD	57.850	114.183	2500.4		298.0			553.0	713.0	GS	record
SHE	40.646	48.642	2505.1		301.0					GS	bulletin
NLT	56.500	115.700	2584.1		308.3				737.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
01/29/70	07:03:00.0	49.7956	78.1239

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TEH	35.738	51.386	2661.5		324.0					ISC	bulletin
SKL	55.870	117.380	2689.2	321.0	317.5				766.5	GS	record
DUS	42.080	44.700	2701.1		319.8					GS	bulletin
SRI	36.758	49.383	2716.9		321.5					ISC	bulletin
CAA	56.900	118.270	2741.5		322.8				775.0	GS	record
STE	41.000	44.370	2786.3		326.0					GS	bulletin
BKR	41.733	43.517	2805.2		330.5					GS	record
TAB	38.068	46.327	2833.7		333.0					ISC	bulletin
OBN	55.115	36.568	2839.6		329.0		617.2		798.5	GS	record
ABS	41.750	42.810	2854.9		333.4					GS	bulletin
TUP	54.430	119.900	2861.9		331.8					GS	bulletin
TUP	54.430	119.900	2861.9		332.0				817.0	GS	record
SHL	25.567	91.883	2934.8		337.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/25/71	03:32:59.9	49.7685	78.0339

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
BRV	53.083	70.250	654.0	89.0			156.6			GS	bulletin
NVS	54.850	83.266	667.7	89.6					193.1	GS	bulletin
NVS	54.850	83.266	667.7	89.6		109.3	158.1		186.1	GS	record
ELT	53.253	86.277	690.0	93.9						GS	bulletin
KKOR&	52.912	69.025	717.3	96.9						CSE	record
TEGR&	43.390	79.720	719.9	97.4		119.8	171.4		207.4	CSE	record
AAA	43.267	76.950	726.7	99.1					205.1	GS	bulletin
TLG&	43.238	77.225	727.8	97.9		120.9	173.8		210.1	CSE	record
BKOL&	42.633	79.983	806.3	108.3		131.9	190.9		231.5	CSE	record
KDSK	42.123	77.188	851.3	113.1			197.6			GS	bulletin
CHIC&	42.060	72.480	957.3	123.8			229.3		291.9	CSE	record
SUFI&	40.057	73.553	1133.8	147.1			263.4		324.2	CSE	record
UER	51.563	94.087	1149.0	148.6		189.1	263.1		326.1	GS	record
FRG	40.370	71.780	1152.4	149.6						GS	bulletin
TAZH&	56.252	94.953	1339.0	172.5			300.6		369.8	CSE	record
GAR	39.000	70.320	1341.9	171.9						GS	bulletin
SVE	56.827	60.637	1393.7	177.1			311.1	320.1	394.1	GS	record
ZER&	41.573	64.277	1401.2	177.4			319.8	348.0	400.2	CSE	record
URG&	39.388	67.262	1431.3	180.5			321.7	349.9	405.4	CSE	record
DSH	38.570	68.760	1444.3	186.4						GS	bulletin
KUL	37.900	69.780	1472.4	188.5						GS	bulletin
ARU	56.416	58.570	1490.6	190.1	201.1		339.6	350.1	422.1	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/25/71	03:32:59.9	49.7685	78.0339

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ORL	52.520	99.830	1548.1	201.3				358.1	445.1	GS	record
MOY	51.670	101.000	1627.4	210.1			358.1	386.6	462.6	GS	record
ARS	51.920	102.430	1725.1	221.1	225.1		384.6	399.4	493.1	GS	record
ZAK	50.383	103.283	1798.4	227.9						GS	bulletin
ZAK	50.383	103.283	1798.4	228.3	231.5		396.9	406.4	515.1	GS	record
KBL	34.541	69.043	1841.8	230.2						ISC	bulletin
IRK	52.242	104.270	1850.0	233.1						GS	bulletin
IRK	52.242	104.270	1850.0	233.6	238.8		408.8	422.6	529.6	GS	record
TIG	52.770	106.330	1987.9	248.3			437.6	455.1	568.1	GS	record
ASH	37.950	58.350	2042.7	253.1						GS	bulletin
KAT	39.028	56.270	2090.0	263.1				481.1		GS	bulletin
MSH	36.311	59.588	2106.2	264.6						ISC	bulletin
NIZ	55.770	109.550	2205.9	271.5			481.6	490.1	626.1	GS	record
BDN	53.700	110.110	2236.9	273.9	276.4		498.6		638.1	GS	record
NRI	69.430	88.083	2255.0		270.8			503.6	653.6	GS	record
KMO	55.880	111.200	2309.8	283.9	281.3		507.1	519.1	658.1	GS	record
NDI	28.683	77.217	2338.3		284.7					ISC	bulletin
MAK	42.961	47.505	2445.8		296.1					GS	bulletin
KHP	49.720	112.370	2450.8	307.1	296.3		536.1	543.1	702.1	GS	record
UKT	55.480	113.620	2460.7		297.1			542.1	704.1	GS	record
SHE	40.646	48.642	2498.1		306.1					GS	bulletin
BOD	57.850	114.183	2507.4		298.3					GS	bulletin
GRO	43.320	45.750	2552.9		306.1					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
04/25/71	03:32:59.9	49.7685	78.0339

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NLT	56.500	115.700	2591.2	321.4	309.9		567.6	560.7	735.1	GS	record
TEH	35.738	51.386	2654.3		318.1					ISC	bulletin
KRV	40.647	46.319	2661.9		315.1					GS	bulletin
SRI	36.758	49.383	2709.8		321.0					ISC	bulletin
GOR	41.980	44.130	2740.8		323.7					GS	bulletin
CAA	56.900	118.270	2748.6		323.5			589.1	783.6	GS	record
MOS	55.738	37.625	2763.5		323.1					GS	bulletin
STE	41.000	44.370	2779.5		326.1					GS	bulletin
BKR	41.733	43.517	2798.5		329.3					GS	bulletin
TAB	38.068	46.327	2826.7		331.6					ISC	bulletin
ABS	41.750	42.810	2848.2		333.1					GS	bulletin
TUP	54.430	119.900	2869.0		332.3			598.6	814.1	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/30/71	03:56:59.8	49.9460	78.981

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NVS	54.850	83.266	618.0	83.6						GS	bulletin
NVS	54.850	83.266	618.0	84.2		100.7	148.4		173.0	GS	record
BRV	53.083	70.250	698.1	93.5			160.7			GS	bulletin
TLG&	43.238	77.225	756.8	101.0		123.4	182.3		215.9	CSE	record
AAB	43.230	77.230	757.6	101.0						GS	bulletin
AAA	43.267	76.950	757.7	100.7			196.7			GS	bulletin
KKOR&	52.912	69.025	765.5	102.5		128.0	174.6		207.9	CSE	record
NRN	41.430	76.000	973.2	129.8						GS	bulletin
CHIC&	42.060	72.480	1008.8	130.0		161.0	230.6		281.2	CSE	record
UER	51.563	94.087	1078.2	141.2						GS	bulletin
UER	51.563	94.087	1078.2	141.2		175.2			298.4	GS	record
CHM	42.319	69.603	1112.3				257.8			GS	bulletin
NAM	41.000	71.660	1144.6	157.7						GS	bulletin
SUFI&	40.057	73.553	1177.1	153.4			271.7		333.4	CSE	record
FRG	40.370	71.780	1202.7	155.7					347.7	GS	bulletin
TAS	41.340	69.310	1214.4	155.2						GS	bulletin
MUR	38.370	73.930	1345.7	177.5						GS	bulletin
GAR	39.000	70.320	1394.1	178.3						GS	bulletin
SVE	56.827	60.637	1433.0	181.2			318.2	348.2	398.2	GS	record
ORL	52.520	99.830	1477.4	194.2			335.8		423.7	GS	record
URG&	39.388	67.262	1491.2	188.4			334.2	348.7	420.6	CSE	record
DSH	38.570	68.760	1499.7	193.4						GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/30/71	03:56:59.8	49.9460	78.981

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KHO	37.480	71.530	1505.8	193.1					435.4	GS	bulletin
KUL	37.900	69.780	1524.2	200.2						GS	bulletin
ARU	56.416	58.570	1533.6	194.2						GS	record
MOY	51.670	101.000	1556.6	200.4						GS	bulletin
MOY	51.670	101.000	1556.6	202.2				352.7	444.2	GS	record
ARS	51.920	102.430	1654.3	212.9					463.4	GS	record
ZAK	50.383	103.283	1727.9	220.4						GS	bulletin
ZAK	50.383	103.283	1727.9	220.6					494.7	GS	record
IRK	52.242	104.270	1779.2	225.7					510.2	GS	record
IRK	52.242	104.270	1779.2	227.2						GS	bulletin
WRS	34.150	71.400	1858.5	232.3						ISC	bulletin
NIL	33.650	73.252	1867.6	235.1						ISC	bulletin
KBL	34.541	69.043	1891.1	237.2						ISC	bulletin
MNL	33.147	73.750	1912.2	241.4						ISC	bulletin
TIG	52.770	106.330	1917.2	240.7					544.2	GS	record
ASH	37.950	58.350	2110.9	262.8						GS	bulletin
NIZ	55.770	109.550	2137.0	264.9					605.6	GS	record
BDN	53.700	110.110	2166.6	267.1					617.1	GS	record
MSH	36.311	59.588	2172.2	270.2						ISC	bulletin
NRI	69.430	88.083	2223.7		271.7					GS	bulletin
NRI	69.430	88.083	2224.0	272.4	276.6			493.4	625.4	GS	record
KMO	55.880	111.200	2241.0		274.8			503.6	638.1	GS	record
QUE	30.188	66.950	2411.3		291.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/30/71	03:56:59.8	49.9460	78.981

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
CIT	52.020	113.550	2413.5		292.2					GS	record
BOD	57.850	114.183	2440.3		291.8			534.4		GS	record
BOD	57.850	114.183	2440.3		292.9					GS	bulletin
NLT	56.500	115.700	2522.8		303.4				725.9	GS	record
CAA	56.900	118.270	2680.5		318.0				761.5	GS	record
TEH	35.738	51.386	2724.2		323.7					ISC	bulletin
KRV	40.647	46.319	2732.3		321.2					GS	bulletin
PYA	44.033	43.058	2778.9		325.8					GS	bulletin
SRI	36.758	49.383	2780.4		327.2					ISC	bulletin
TUP	54.430	119.900	2799.3		326.2				801.2	GS	record
GRS	39.500	46.330	2803.0		328.2					GS	bulletin
MOS	55.738	37.625	2813.1		328.2					GS	bulletin
BKR	41.733	43.517	2868.0		335.0					GS	bulletin
TAB	38.068	46.327	2897.5		337.2					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/30/71	06:21:00.2	49.7600	78.0371

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NVS	54.850	83.266	668.4	89.8		105.3	168.2		193.8	GS	bulletin
NVS	54.850	83.266	668.4	90.0		110.0	157.8		188.8	GS	record
ELT	53.253	86.277	690.4	93.8			165.8		197.3	GS	record
ELT	53.253	86.277	690.4	94.0			165.0			GS	bulletin
KKOR&	52.912	69.025	718.0	96.6						CSE	record
TLG&	43.238	77.225	726.8	97.3		120.4	174.2		208.5	CSE	record
BKOL&	42.633	79.983	805.3	108.2		131.9	192.0		229.4	CSE	record
KDSK	42.123	77.188	850.4	115.3						GS	bulletin
NRN	41.430	76.000	938.2	124.8						GS	bulletin
TOSK&	41.845	73.060	959.4	126.2		158.1	223.9		269.9	CSE	record
ANR	40.750	72.370	1093.6	144.1						GS	bulletin
UER	51.563	94.087	1149.0	149.8		188.6			325.3	GS	record
FRG	40.370	71.780	1151.7	150.3			275.3		325.3	GS	bulletin
MUR	38.370	73.930	1305.5	171.3						GS	bulletin
GAR	39.000	70.320	1341.2	171.7						GS	bulletin
SVE	56.827	60.637	1394.4	177.2			312.8		393.8	GS	record
DSH	38.570	68.760	1443.6	183.8						GS	bulletin
KUL	37.900	69.780	1471.6	188.7						GS	bulletin
ORL	52.520	99.830	1548.2	201.0			352.8	359.8	441.8	GS	record
MOY	51.670	101.000	1627.4	208.1	216.3		361.1	377.6	473.8	GS	record
MOY	51.670	101.000	1627.4	210.1						GS	bulletin
ARS	51.920	102.430	1725.2	220.8	225.4		383.8	398.8	492.8	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/30/71	06:21:00.2	49.7600	78.0371

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ZAK	50.383	103.283	1798.4	228.1						GS	bulletin
ZAK	50.383	103.283	1798.4	228.3	232.3		398.3	411.3	516.3	GS	record
IRK	52.242	104.270	1850.1	232.8	238.8		410.8	430.3	528.8	GS	record
IRK	52.242	104.270	1850.1	233.4						GS	bulletin
TIG	52.770	106.330	1988.0	247.8				454.3	571.8	GS	record
ASH	37.950	58.350	2042.4	253.9						GS	bulletin
NIZ	55.770	109.550	2206.2	271.6			484.6	489.6	628.1	GS	record
BDN	53.700	110.110	2237.0	273.2			499.6		637.8	GS	record
KMO	55.880	111.200	2310.1	284.6	281.6		519.8	510.1	656.8	GS	record
KHP	49.720	112.370	2450.8		295.6			544.8	702.8	GS	record
UKT	55.480	113.620	2460.9		296.9			547.3	705.8	GS	record
CIT	52.020	113.550	2484.3		298.8				710.8	GS	record
BOD	57.850	114.183	2507.8		298.8					GS	bulletin
BOD	57.850	114.183	2507.8		299.3			547.3	718.3	GS	record
GRO	43.320	45.750	2553.1		307.8					GS	bulletin
NLT	56.500	115.700	2591.5		309.0			564.8	734.8	GS	record
KRV	40.647	46.319	2662.0		316.1					GS	bulletin
SKL	55.870	117.380	2696.5	326.8	318.8				773.8	GS	record
GRS	39.500	46.330	2732.4		322.8					GS	bulletin
MOS	55.738	37.625	2764.2		323.8					GS	bulletin
BKR	41.733	43.517	2798.6		328.6					GS	bulletin
ABS	41.750	42.810	2848.4		332.8					GS	bulletin
TUP	54.430	119.900	2869.3		332.8			606.8	813.8	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
02/10/72	05:03:00.0	50.0243	78.8781

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
NVS	54.850	83.266	613.6	83.0		103	138.0		176.0	GS	record
ELT	53.253	86.277	624.6	86.2		101			174.2	GS	record
KKOR&	52.912	69.025	754.9	100.9		126.3	173.7		205.6	CSE	record
TLG&	43.238	77.225	764.0	101.7		123.7	181.8		215.0	CSE	record
AAA	43.267	76.950	764.6						222.8	GS	bulletin
BKOL&	42.633	79.983	825.0	109.7		133	195.3		234.0	CSE	record
KDSK	42.123	77.188	886.8	117.5		150	208.0			GS	bulletin
TOSK&	41.845	73.060	1013.0	132.7		166.5	235.1		287.1	CSE	record
KARK&	41.630	72.730	1046.1	136.4			244.7		297.0	CSE	record
UER	51.563	94.087	1083.0	141.5					307.0	GS	record
CHM	42.319	69.603	1113.5	143.6			256.8		322.2	GS	bulletin
NAM	41.000	71.660	1148.1	149.2						GS	bulletin
FRG	40.370	71.780	1206.5	157.0						GS	bulletin
MUR	38.370	73.930	1351.6	176.9						GS	bulletin
SVE	56.827	60.637	1421.8	179.5			318.0		398.0	GS	record
ORL	52.520	99.830	1481.6	193.0		243.7	327.7	343.2	418.7	GS	record
SAM	39.660	66.950	1483.0	192.0					433.0	GS	bulletin
KHO	37.480	71.530	1510.5	193.5					423.6	GS	bulletin
ARU	56.416	58.570	1522.6	191.8	202.8		341.6		436.8	GS	record
MOY	51.670	101.000	1561.3	202.6		258.6	349.1	366.1	442.6	GS	record
ARS	51.920	102.430	1658.9	213.6		274.8	382.8		474.8	GS	record
ZAK	50.383	103.283	1733.5	221.0			380.7	399.0	489.7	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
02/10/72	05:03:00.0	50.0243	78.8781

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
IRK	52.242	104.270	1783.5	226.5					511.5	GS	record
KBL	34.541	69.043	1895.1	237.1						ISC	bulletin
TIG	52.770	106.330	1921.2	240.5					546.5	GS	record
NIZ	55.770	109.550	2139.1	264.2			467.2	477.2	612.2	GS	record
BDN	53.700	110.110	2170.0	267.2			488.1		617.2	GS	record
MSH	36.311	59.588	2171.6	269.8						ISC	bulletin
KMO	55.880	111.200	2243.1		275.0			501.0	637.5	GS	record
NDI	28.683	77.217	2369.9		288.0					ISC	bulletin
KHP	49.720	112.370	2385.5		290.6				684.0	GS	record
UKT	55.480	113.620	2393.9		290.5				685.2	GS	record
QUE	30.188	66.950	2415.4		292.1					ISC	bulletin
CIT	52.020	113.550	2417.7		292.2					GS	record
BOD	57.850	114.183	2441.4		293.0		546.9	535.4		GS	record
NLT	56.500	115.700	2524.6		303.0			556.0	723.5	GS	record
SHE	40.646	48.642	2563.4		307.5					GS	bulletin
SKL	55.870	117.380	2629.5		312.4					GS	record
CAA	56.900	118.270	2682.2		318.0				766.0	GS	record
TEH	35.738	51.386	2721.3		323.0					ISC	bulletin
DUS	42.080	44.700	2757.5		325.2					GS	bulletin
STE	41.000	44.370	2843.3		331.2					GS	bulletin
TAB	38.068	46.327	2892.6		337.0					ISC	bulletin
SHL	25.567	91.883	2931.8		337.1					ISC	bulletin
ZUG	42.400	41.800	2946.9		347.0					GS	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/07/72	01:28:00.0	49.8268	78.1155

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MAKI&	52.570	70.617	605.6	82.1			145.8		168.8	CSE	record
ALAB&	53.600	70.900	650.8	88.5			157.7		184.9	CSE	record
NVS	54.850	83.266	659.1	88.5		108.8	154.5		181.2	GS	record
ELT	53.253	86.277	681.4	93.0		115.2	161.2		193.0	GS	record
KKOR&	52.912	69.025	718.8	96.5		118.3	171.0		194.9	CSE	record
AAA	43.267	76.950	733.8	98.7					211.2	GS	bulletin
KDSK	42.123	77.188	858.3	123.5			205.5		241.5	GS	bulletin
CHM	42.319	69.603	1060.4	135.9					302.5	GS	bulletin
NAM	41.000	71.660	1101.2	144.0						GS	bulletin
FRG	40.370	71.780	1160.9	150.0					335.5	GS	bulletin
MUR	38.370	73.930	1314.2	173.4					373.2	GS	bulletin
ABAL&	58.116	92.717	1324.0	170.2			296.3		364.9	CSE	record
SVE	56.827	60.637	1393.9	177.5			313.5			GS	record
SAM	39.660	66.950	1429.7	183.0					401.0	GS	bulletin
ARU	56.416	58.570	1491.4	190.0	201.7		338.0	349.0	420.0	GS	record
ORL	52.520	99.830	1540.4	200.4				360.0	443.0	GS	record
ARS	51.920	102.430	1717.6	219.0	225.0		384.0	397.0	490.0	GS	record
ARS	51.920	102.430	1717.6	333.0						GS	bulletin
ZAK	50.383	103.283	1791.4	228.0	232.2		402.0	421.0	511.0	GS	record
WRS	34.150	71.400	1823.7	227.4						ISC	bulletin
NIL	33.650	73.252	1838.1	230.5						ISC	bulletin
IRK	52.242	104.270	1842.4	235.0					525.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
06/07/72	01:28:00.0	49.8268	78.1155

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
KBL	34.541	69.043	1850.2	230.8						ISC	bulletin
TIG	52.770	106.330	1980.1	247.7			441.0	455.0	565.0	GS	record
MSH	36.311	59.588	2114.8	264.3						ISC	bulletin
DDI	30.323	78.056	2162.5	267.0						ISC	bulletin
NIZ	55.770	109.550	2197.6	270.6				494.0	620.5	GS	record
BDN	53.700	110.110	2228.9	273.5				500.0	631.0	GS	record
KMO	55.880	111.200	2301.5		280.5		518.0	508.0	663.0	GS	record
NDI	28.683	77.217	2345.0		285.0					ISC	bulletin
QUE	30.188	66.950	2370.2		287.0					ISC	bulletin
KHP	49.720	112.370	2443.7		296.0			543.0	701.0	GS	record
UKT	55.480	113.620	2452.4		297.0				691.0	GS	record
CIT	52.020	113.550	2476.5		298.0					GS	record
BOD	57.850	114.183	2498.9		297.6			547.0	714.0	GS	record
SHE	40.646	48.642	2505.2		302.0					GS	bulletin
TEH	35.738	51.386	2662.4		317.0					ISC	bulletin
CHA	26.833	87.167	2663.4		317.0					ISC	bulletin
TI2	41.730	44.750	2716.9		322.0					GS	bulletin
CAA	56.900	118.270	2740.2		322.7				777.0	GS	record
STE	41.000	44.370	2786.2		326.0					GS	bulletin
TAB	38.068	46.327	2834.1		332.0					ISC	bulletin
KAR	24.933	67.143	2916.8		343.8					ISC	bulletin
SHL	25.567	91.883	2938.1		337.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/02/72	01:27:00.2	49.9270	78.8173

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SKAL&	49.570	82.600	275.2	42.5						CSE	record
NVS	54.850	83.266	625.2	85.1		103.4	147.4		177.4	GS	record
ELT	53.253	86.277	634.7	87.0		104.1	151.8		176.8	GS	record
MAKI&	52.570	70.617	642.6	86.8		102.1	153.4		187.2	CSE	record
DZHU&	52.933	70.600	661.0	89.2		103.5	158.6		189.7	CSE	record
ALAB&	53.600	70.900	681.3	91.3		109.7	161.9		191.1	CSE	record
VEDN&	52.600	69.500	713.8	95.4		119.5	169.6		201.2	CSE	record
TLG&	43.238	77.225	752.6	99.3		122.2	180.5		214.7	CSE	record
KKOR&	52.912	69.025	756.4	100.8		122.1	178.5		215.6	CSE	record
BKOL&	42.633	79.983	814.8	108.9		132.5	194.9		233.5	CSE	record
KDSK	42.123	77.188	875.5	117.8		146.3				GS	bulletin
TOSK&	41.845	73.060	1001.4	131.5		165.9	234.8		286.6	CSE	record
KARK&	41.630	72.730	1034.6	134.8			243.8		296.4	CSE	record
UER	51.563	94.087	1090.0	141.8		177.8	247.8		297.8	GS	record
CHM	42.319	69.603	1102.7	141.8			254.2		315.4	GS	bulletin
NAM	41.000	71.660	1136.6	148.8						GS	bulletin
FRG	40.370	71.780	1194.9	155.2					345.2	GS	bulletin
ABAL&	58.116	92.717	1283.1	164.3					360.5	CSE	record
MUR	38.370	73.930	1339.9	174.6					383.6	GS	bulletin
SAM	39.660	66.950	1472.2				333.8			GS	bulletin
ORL	52.520	99.830	1489.2	192.2				338.2	420.2	GS	record
ARU	56.416	58.570	1525.4	191.2	202.2		338.2	352.2	396.2	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/02/72	01:27:00.2	49.9270	78.8173

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
MOY	51.670	101.000	1568.4	202.1			348.3	361.8	444.8	GS	record
ARS	51.920	102.430	1666.1	213.6				380.6	470.6	GS	record
ZAK	50.383	103.283	1739.8	221.8			380.3		491.3	GS	record
IRK	52.242	104.270	1791.0		226.3				505.8	GS	record
NIL	33.650	73.252	1862.2	234.0						ISC	bulletin
KBL	34.541	69.043	1883.6	235.3						ISC	bulletin
TIG	52.770	106.330	1929.0	241.8				437.7	544.2	GS	record
LAH	31.550	74.333	2071.6	256.8						ISC	bulletin
NIZ	55.770	109.550	2148.2	266.4				482.9	612.4	GS	record
MSH	36.311	59.588	2161.6	267.2						ISC	bulletin
BDN	53.700	110.110	2178.2	263.3					616.4	GS	record
NRI	69.430	88.083	2227.0		273.0			491.0	632.0	GS	record
NDI	28.683	77.217	2358.8		286.8					ISC	bulletin
KHP	49.720	112.370	2392.1		290.2		539.7	534.8	687.2	GS	record
UKT	55.480	113.620	2402.8		291.5				686.5	GS	record
QUE	30.188	66.950	2403.8		291.0					ISC	bulletin
CIT	52.020	113.550	2425.3		292.2				696.0	GS	record
BOD	57.850	114.183	2451.1		292.7		537.5	543.0	696.0	GS	record
NLT	56.500	115.700	2533.9		303.1					GS	record
SHE	40.646	48.642	2556.9		307.8					GS	bulletin
SKL	55.870	117.380	2638.6		314.0				756.0	GS	record
CAA	56.900	118.270	2691.6		318.2				765.9	GS	record
TEH	35.738	51.386	2712.7		322.8					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
11/02/72	01:27:00.2	49.9270	78.8173

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
TUP	54.430	119.900	2810.8		327.5				799.5	GS	record
STE	41.000	44.370	2837.6		331.4					GS	bulletin
DYR&	38.992	45.983	2848.2		332.5					CSE	record
ERE	40.170	44.470	2880.4		333.8					GS	bulletin
TAB	38.068	46.327	2885.6		336.2					ISC	bulletin
ABS	41.750	42.810	2905.7		338.2					GS	bulletin
SHL	25.567	91.883	2924.2		336.4					ISC	bulletin
KAR	24.933	67.143	2947.2		341.3					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/10/72	04:27:00.0	49.8194	78.0582

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SKAL&	49.570	82.600	328.5	50.4		54.5			88.7	CSE	record
MAKI&	52.570	70.617	602.6	82.6		98.7	146.2		165.4	CSE	record
DZHU&	52.933	70.600	623.2	85.5						CSE	record
ALAB&	53.600	70.900	648.4	88.1		105.9				CSE	record
VEDN&	52.600	69.500	672.2	91.0		109.2				CSE	record
ELT	53.253	86.277	685.2	93.0						GS	record
KKOR&	52.912	69.025	715.7	96.4						CSE	record
KOSH&	53.030	69.070	718.7	97.1						CSE	record
TLG&	43.238	77.225	733.6	97.7		120.7	174.1		208.2	CSE	record
BKOL&	42.633	79.983	811.5	109.4		132.8	193.0		230.5	CSE	record
KDSK	42.123	77.188	857.1	115.6		139.1			252.1	GS	bulletin
TOSK&	41.845	73.060	966.0	126.5		158.4	224.5		270.4	CSE	record
KARK&	41.630	72.730	998.5	130.6		164.7	231.3		282.8	CSE	record
CHM	42.319	69.603	1057.1	137.8						GS	bulletin
NAM	41.000	71.660	1098.5	144.4						GS	bulletin
UER	51.563	94.087	1145.7	149.0						GS	record
FRG	40.370	71.780	1158.2	151.1						GS	bulletin
ABAL&	58.116	92.717	1327.3	169.9			296.0			CSE	record
SVE	56.827	60.637	1391.3	177.2			312.0		393.0	GS	record
SAM	39.660	66.950	1426.4	182.0						GS	bulletin
KHO	37.480	71.530	1465.4	187.6						GS	bulletin
ARU	56.416	58.570	1488.6	188.5			342.5		420.0	GS	record

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/10/72	04:27:00.0	49.8194	78.0582

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
ORL	52.520	99.830	1544.6	201.0						GS	record
MOY	51.670	101.000	1624.1	210.0						GS	record
ARS	51.920	102.430	1721.8	222.4						GS	record
ZAK	50.383	103.283	1795.6	228.0						GS	record
WRS	34.150	71.400	1821.5	228.1						ISC	bulletin
NIL	33.650	73.252	1836.3	231.1						ISC	bulletin
IRK	52.242	104.270	1846.5	234.0						GS	record
KBL	34.541	69.043	1847.6	231.7						ISC	bulletin
MNL	33.147	73.750	1882.8	237.7						ISC	bulletin
TIG	52.770	106.330	1984.3	248.0						GS	record
BHK	31.417	76.417	2045.2	252.8						ISC	bulletin
LAH	31.550	74.333	2049.4	255.0						ISC	bulletin
MSH	36.311	59.588	2111.1	265.2						ISC	bulletin
DDI	30.323	78.056	2161.7	266.6						ISC	bulletin
NIZ	55.770	109.550	2201.6	271.2						GS	record
BDN	53.700	110.110	2233.0	274.0						GS	record
KMO	55.880	111.200	2305.5		281.0					GS	record
NDI	28.683	77.217	2344.1				534.0			ISC	bulletin
NDI	28.683	77.217	2344.1		285.5					ISC	bulletin
KHP	49.720	112.370	2447.9		296.3					GS	record
UKT	55.480	113.620	2456.4		296.1					GS	record
CIT	52.020	113.550	2480.7		298.7					GS	record
CHA	26.833	87.167	2664.1		317.0					ISC	bulletin

Date	Origin Time(UT)	Latitude (deg. N)	Longitude (deg. E)
12/10/72	04:27:00.0	49.8194	78.0582

Station Code	Lat., deg. N	Long., deg. E	Distance, km	Travel Times, sec						Network	Source
				Pn	P	Pg	Sn	S	Lg		
SKL	55.870	117.380	2692.0		318.8					GS	record
CAA	56.900	118.270	2744.1		323.6					GS	record
VAR	25.300	83.017	2750.5		322.1					ISC	bulletin
STE	41.000	44.370	2782.0		326.6					GS	bulletin
DYR&	38.992	45.983	2792.4		328.9					CSE	record
BKR&	41.730	43.510	2801.4		329.4					CSE	record
TAB	38.068	46.327	2829.9		332.0					ISC	bulletin
ABS	41.750	42.810	2850.4		333.4					GS	bulletin
TUP	54.430	119.900	2865.0		332.0					GS	record
SHL	25.567	91.883	2939.4		338.0					ISC	bulletin
BOK	23.795	85.886	2962.6		344.0					ISC	bulletin

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